

Children's Newspaper

# The CHILDREN'S NEWSPAPER

AND CHILDREN'S PICTORIAL

*The Story of the World Today for the Men and Women of Tomorrow*

Number 202

Week Ending  
JANUARY 27, 1923

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Postage: Penny Inland  
Halfpenny Abroad

Every Thursday 2d.

## MOTOR RIDE ACROSS A DESERT

### TRIUMPH OF A BRAVE OLD MAN

#### SAVING THE LENS MINES

Pumping Out 80 Cubic Miles of Water from the Flooded Pits

#### SPLENDID HEROISM IN A DIRE CATASTROPHE

By Our Paris Correspondent

France is hoping this year to witness the triumph of an enterprise which she owes to the brave spirit of one man who, though very old, has been struggling since 1915 for the sake of a great idea. He is Monsieur Reumaux, who has devoted his whole life to the development of the coal mines of Lens.

The coalfield of the North of France lies below a huge underground lake—a lake of chalk and water altogether about 450 feet deep, which constantly threatens to brim over. Lying thus, the pits must cross the water-laden chalk before reaching the beds of fuel, and the digging is, of course, extremely difficult because of the incessant rush of the waters.

#### Water Rushes In

These mines, from the top to the waterproof beds, are provided with watertight linings, but in spite of these linings large quantities of water still find their way in—so much that in some pits the miners have to pump half a ton of water for one ton of coal.

This being the condition of the mines, it was easy for the Germans, when they occupied the land, to flood the pits; and they did their worst.

It was here that devastation by the German Army reached its height. In the mines the German authorities found plans of the workings, which showed the various levels of the water-bearing strata, and at all these points they blew up the linings of the pit-shafts with dynamite, so that the water rushed into the mines, and in some cases flooded the mines to a depth of 3000 feet.

#### Damage in the Pits

In five days in November 1915 thirty pits were flooded, and just before they were driven out of Lens the German Army destroyed by dynamite all the pit-head frames, fans, winding-engines, and other equipment into a tangled mass of steel and stone, lying about in the flooded shafts. Altogether 200 coal pits were ruthlessly destroyed in this way.

The mines, when the French took possession again, were flooded with 17,000 million gallons of water, and the amount was constantly increasing while pumping facilities were being installed. Thus France found these mines again, the mines which when the war began yielded 20 million tons of coal a year.

It was this terrible state of things that inspired the courage of Monsieur Reumaux. He remained in Lens, and, in spite of the dangers, of his own private war troubles, of his great age, he worked out plans for saving the

### The Tortoise That Saw Napoleon



This tortoise, still living a peaceful life in the island of St. Helena, is the only creature now alive that looked upon Napoleon. See next column

mines. The result was that, his plans being ready the very day the war came to an end, the work could be begun without any loss of time, and now it has been going on for four years.

The work Monsieur Reumaux has done is the rebuilding of the watertight lining of the pits and the pumping of the water.

The shafting to be lined was but chalk lying in water, and Monsieur Reumaux's idea was to drown the chalk in enormous quantities of hydraulic cement, which, by substituting itself for the water, would form a waterproof mass. The operation needed over 3500 tons of cement, but after great difficulty the work was splendidly done.

Then the emptying of the mines remained. The engineers had first to set up pumps to bring up the water to great heights; then to provide the engines of these pumps with enormous electric power; and then safely to dispose of the water in a country where rivers are rare and small. One authority has calculated at eighty cubic miles the water that had to be conducted to the Flemish rivers, and the pumps are still working night and day in doing this. There are altogether 42 pumps at work, each

about 39 feet high and weighing 80 tons, the weight of an ordinary railway engine. The total expenses amount to over 200 million francs, and the work is expected to be over this year.

It will be a mighty triumph for the old master of the mines when the land is at work again, and all good people will wish us to send him our greeting.

### LISTENING-IN

#### Hearing a Man Eat a Biscuit

As is well known, it is possible to magnify audible sounds as well as visible objects, and at a Scientific Exhibition at King's College, London, Professor J. McGregor-Morris, in a lecture on submarine detection, gave an amusing demonstration of this.

The Professor's assistant went outside the lecture-room and, with a microphone on his head, ate a biscuit. Inside the lecture-room an amplifier was switched on, and the chewing of the biscuit could be heard like lions feeding.

It is perhaps just as well that our ears are not too acute, and that we do not all wear microphones in our hats.

Have You Seen My Magazine?  
New Number On Sale Everywhere

### HE SAW NAPOLEON

#### THE GIANT TORTOISE OF ST. HELENA

Reptile Still Alive After Nearly Three Centuries

#### SHELL WEIGHING A QUARTER OF A TON

The tortoise of St. Helena, which looked upon Napoleon, has had its photograph taken bearing a girl of about 12 years on its back, and we give the photograph from the excellent magazine published by the American Museum of Natural History.

No man has inspired so many books as Napoleon. The mere titles of the volumes written about him occupy many pages of the British Museum catalogues, yet the only living thing that saw him, and was present throughout his captivity, is dumb.

If it could speak it would add little to our knowledge, but the thought is impressive that this creature was alive on the island with the man who had caused one world war, and survives, when all others of the drama are dead, in an age which sees mankind binding the wounds of a second world war.

#### A Dying Race

The race to which this St. Helena tortoise belongs is fast dying out. Giant tortoises grew from smaller species in the placid sanctuary afforded by two widely separated groups of islands. There were no men to attack them, no animals to challenge their progress. The climate was generous, the food abundant, and so little tortoises grew large and left descendants inheriting a tendency to live longer and longer and to grow gigantic.

Late in the 18th century seamen found the reptiles good to eat, and began to raid them as they raided the dodo and the solitaire. They slew thousands. Many they distributed as gifts to other islands. The one now at St. Helena was taken from its island home of Aldabra, carried to St. Helena and left there, because it was notable for its great size. There it has been for over a century, and its age is estimated at between 200 and 300 years.

#### Link with the Past

Giants of this tortoise tribe are found in the zoological gardens of several countries to which they have been taken from their natural haunts in warm climates. The largest ever received alive in England was one which is now in the Rothschild Museum at Tring. Its shell measured 67½ inches, and it weighed 560 pounds, or exactly a quarter of a ton.

These monsters seem to link us with the era of giant reptiles, and to suggest the immense age to which those nightmare Titans lived. There was not a brain worthy the name among them; but, like trees, they had marvellous power of growth and time-defying toughness.



## TAKING FRENCH LEAVE

### TROOPS MARCH INTO GERMANY

France Has Her Own Way and Goes Forward Without Britain

#### WHAT WILL HAPPEN?

By Our Political Correspondent.

There was a time within the memory of some when if anyone did what he wanted or took what he wanted on his own responsibility, without asking whether he might have it, he was said to be taking French leave.

The expression came from the period of the wars of Napoleon, when French armies "lived on the country" they passed through. That is, every man in a section of a company picked up in the course of the day something or other that would be useful in the cooking-pot at supper-time. This collecting of necessities, without asking leave of anybody, was supposed to be a distinct national characteristic of the French.

#### What France Believes

They have it still. They are proving that they have it by going straight-forward for the things they need and taking them without heeding the objections of other people. They need the reparations allotted to them under the war settlement, and they have marched into Essen, the centre of the military preparations of Germany before the war, to take them if possible.

They are not turned away from their purpose either by German attempts to elude or resist them, or by Great Britain's objection to the use of force, or by the dissent of the United States and the withdrawal of her soldiers from the Rhine area.

#### What Britain Believes

The practice of Napoleon's troops which originated the phrase "French leave" must not be applied too literally to this present instance of France doing for herself what she wishes to do. The old idea, put into plain words, was theft; indeed, it was a habit of theft. But in doing what she does now France is, of course, taking her own way to get what she wants because she is convinced it is hers by right and justice—as we may all of us admit. Germany will not pay her what is lawfully her due, and so she takes it.

The British Government believes that France is asking too much under the circumstances that now prevail; that her way of trying to get it is not the best way; and that France will fail to get what she expects to get and will increase her difficulties instead of easing them. France believes otherwise.

#### The Occupation

The chief reason why Great Britain stands by and will take no part in this march into the Ruhr valley of French troops and this seizure of German industries, and the reason why the American Republic withdraws her soldiers from the Rhine, is because the use of military force in making good a claim for money looks too much like war, and the English-speaking people are determined not to be drawn into war.

The French reply is that their advance to Essen is not war or an approach to war. They have sent engineers to supervise the working of the coal-mines around Essen, and customs collectors to see that the profits due to

## DOCTOR'S THRILLING ADVENTURES

### HOW A SENATOR SAVED HIS LIFE

Turning the Tables on the Disturbers of Ireland

#### DASH INTO A RIVER

More like a page from Fenimore Cooper than an event in real life is the story of the escape of Dr. Oliver Gogarty, the Irish physician senator, from his rebel captors.

While Dr. Gogarty was having a bath six men and a woman in a motor-car with a liveried chauffeur drove up to his door, and two men demanded to see him.

The doctor, hastily wrapping himself in a bath-towel, came down and faced two men with revolvers, who ordered him to dress, and stood over him while he put on his clothes and a fur coat. Permission to scribble a note to his wife was refused, and he was led to the car, where he was told to make himself thin, and placed on the back seat with a man on each side and a third man on his knee. Opposite him sat two other men, with the woman between them.

#### Rolling to Safety

They drove through some of the brightly-lighted main streets of Dublin, but the doctor was warned that if he tried to attract attention he would be shot then and there.

At an empty cottage near the River Liffey the car stopped, and there Dr. Gogarty was imprisoned. He assisted his guards to kindle a fire, using as fire-paper an old music book containing a song with the appropriate title "We must bide a wee." He bided for a wee two hours, and then made an excuse to go out. Accompanied by a man with a revolver, he went into the garden.

Now an idea came to him. He pulled off his heavy fur coat, threw it over his guard's head, and bolted for the river. Scrambling through a hedge, he rolled down a thirty-foot bank and dropped into the icy water. The river was in flood, and carried him rapidly away; but the doctor is a strong swimmer and managed to take off his coat as he swam.

#### A Fine Swimmer

Still carrying his coat, he made for the river bank again, and clambered up about 300 yards from the point at which he had dropped down. There he presented himself at a cottage, and after he had persuaded the people that he was a living man and not a ghost, he was kindly received, and recovered sufficiently to walk across Phoenix Park to the depot of the Civic Guard, where hot bottles completed his recovery.

Dr. Gogarty holds the Royal Humane Society medals and certificates for life-saving, and he owed his wonderful escape as much to his powerful swimming as to his presence of mind.

Continued from the previous column

the Allies are paid out of the German industries, while the French soldiers are only there as a protection against possible violence.

How these contradictory beliefs and these practical schemes for collecting debts direct from industries will work out only time can disclose. France is on her trial before the world, and her case has only just been opened.

The payment by the Germans of the instalment for reparations already due has been postponed to the end of the month, so that both countries have time for serious thought in which to realise the sound conditions of a true peace.

## FANNY PASSES ON THE FLOWER OF THE FLOWER-GIRLS

A Beautiful Story of Our Storied London Town

### THE GENTLE LIVES ALL HIDDEN AWAY

One would think from the grown-up papers, crammed with crimes and sordid tales, that London is a foul place to live in. It is untrue. London is a lovely place,



Fanny

and the story of its life from day to day is like a tale of chivalry if it is truly told. The pity is that the tale is told untruly, that news is made of the squalor and shame that float on the top, and not of the gentleness and courage and patience and kind-heartedness that lie beneath the surging waves of this vast river of life.

Here is a London story; let it lift up our hearts and drown in them the memory of many London stories that have been forced on our attention of late, greatly against our will.

Fanny Collins, the Flower Girl of Ludgate Hill, is on Ludgate Hill no more. She not only sold flowers, but wore "the white-flower of a blameless life."

She was born in poverty; she could not write; she could hardly read; yet by the kindness of her heart and the beauty of her character she made herself a power for good in the dark places where she moved.

#### A Noble Character

Winter and summer, shine or rain, she sold flowers at her corner, and yet she kept a heart brave enough and rich enough and warm enough to do good turns to everybody. All the flower-girls went to her when hard up or in trouble, and all the little children loved her.

Mrs. Pennington Bickford, who has worked among the flower-girls for years, said that Fanny was "one of the noblest and most beautiful characters a woman could be, a personality among the London flower-sellers with an influence of which the best woman in the land might be proud."

For years Fannie was homeless and used to sleep on staircases or in any odd corner she could find; but members of St. Clement Danes Church furnished a room for her, and one night the fire was kindled, and the lamp lit, and the kettle set a-boiling, and Fanny was given the key and told to go home.

#### Fragrant Memories

It was a wonderful surprise, and the C.N. sends its greeting to that good friend at St. Clement Danes who thought it all out and brought it about.

The homeless flower-girl was speechless with delight, and in this new home Fanny lived until she died the other day. She kept her room spotlessly clean, and soon she adopted a waif as a son. He went to the war and was taken prisoner, and Fanny scraped and pinched to send him parcels of food.

There is no Fanny now in Fanny's Corner at Ludgate Hill; but her good deeds and fragrant memories still blossom in the hearts of those she helped and befriended, and the thought of her will come to us often as we pass her corner with our eyes on the golden-cross high above St. Paul's.

## LIFE IN THE TOMB SCENT THAT LASTS FOR CENTURIES

The Incredible March of the Countless Atoms

### A MILLION YEARS TO FILL AN ELECTRIC LAMP

In the romantic splendour of the riches that are being revealed in the royal tomb at Luxor we lose sight of little things which, insignificant as they seem to us, have a profound appeal to all scientists.

Three thousand years ago certain lovely alabaster vases containing perfume were placed in the vault with the dead king. Today, 30 centuries later, they are brought out into the sunshine and handed to visitors to examine, and the vessels are still giving off fragrance!

The substance with which the vases were charged has therefore had an active life longer than radium. Every child knows that a grain of musk gives off scent year after year without any perceptible loss of weight; but these vessels have been sweetening the air of the tomb since the days of David and Solomon, and still retain some of their fragrance.

#### The Stream of Atoms

Of course the quantity given off is small, but when we reduce the quantity to terms of atoms then the sum becomes so enormous as to defeat ordinary imagination.

The breaking up of matter into atoms and electrons has so extended our calculation that the mere arithmetic of the subject is a good examination paper in itself.

Perhaps the image of a procession of atoms given by Professor F. W. Aston, of Cambridge, is as helpful as anything can be. We are to imagine an electric light bulb exhausted of air. In that we make a tiny hole and allow molecules of air to stream in through it at the rate of one million a second. How long will it take to fill the globe? *One million years.*

Radium gives off energy continuously, as the Egyptian vases give off their scent. It generates every hour sufficient heat to raise its own weight of water from freezing point to boiling point; in 36 hours it decomposes its own weight of water into the gases hydrogen and oxygen.

#### Active for 2500 Years

It yields an emanation which itself possesses three-fourths of the energy of radium. The emanation obtained from a gramme of radium has a volume equalling a pin's head; yet if a thousandth of that minute quantity were mixed with the 100,000 cubic feet of air required to fill a large hall, the quantity in every single cubic inch of air in the hall could be detected by instruments designed for the purpose.

Such is the power of this gaseous emanation that the quantity named would suffice to light up zinc sulphide so that a thousand people in a dark building could see the effect.

But nothing goes on for ever without change. Radium has a life of 2500 years, a period in which one gramme would decompose more than half a million times its own weight of water. It gives off all this energy and decays after 2500 years of activity. *Picture on page 12*

#### Pronunciations in This Paper

Bochum	Bo-koom
Brunelleschi	Broo-nel-lays-kee
Elberfeld	El-ber-felt
Galapagos	Gah-lah-pah-gohs
Juggernaut	Jug-ger-nawt
Punjab	Pun-jahb
Ruhr	Roor
Touggourt	Too-goort



## THE PROBLEM OF THE RAIN

### HOW THE MOUNTAINS GIVE US POWER

Men Who Risk Their Lives to Read the Rain Gauge

### STORING UP WATER FOR TOWNS AND CITIES

One of the most interesting weather problems now being studied is the effect of mountains on rain.

It is well known that on the slopes of mountains the rainfall is greater than in the plains. This is because the wind which carries the rain is forced to ascend when it blows against the mountain side, and is by this means cooled till the water-vapour it carries is condensed.

Anyone who has the good fortune to live close to a range of hills may watch the process of condensation going on whenever a moist wind blows from the direction of the sea. Sometimes this condensation is not sufficient to produce actual rain, and then a line of clouds can usually be seen hanging a short distance above the summits of the hills, or resting upon them. Over the valleys the sky will be clear and blue.

#### Helping the Engineer

When condensation is more complete the whole ridge is hidden in mist.

It is very important to find out the amount by which the rainfall is increased by the presence of hills or mountains; partly because it would increase our knowledge of the mechanism of rain, and partly because such information is helpful to engineers in planning water-power works.

It was at one time supposed that the amount of rainfall increased uniformly with increased altitude, but it is now known that this is not so. The increase in the amount of rainfall as one ascends from the plain up any mountain side is very variable. Sometimes it even gets less toward the top.

The laws on which the amount of increase depends are only partly understood, and the only way in which they can be studied is to place rain-gauges on the mountains and actually to measure the amount of rain which falls.

#### Hundreds of Reservoirs

In various parts of the remote moorland and mountain districts there are hundreds of reservoirs collecting water for the supply of cities, for feeding canals, and for driving turbines to generate electricity. These reservoirs have to be high up to give the necessary head, or fall, to enable the water to be carried where it is wanted, to generate power, and to insure purity.

A very large number of rain-gauges is needed, and the work of looking after them is sometimes very arduous.

Until a few years ago a fully-equipped observatory was maintained on the summit of Ben Nevis, 4400 feet above the level of the sea. Since its abandonment the highest rain-gauge in the British Isles is one on the slopes of Ben More, in the island of Mull. The gauge lies in a sheltered corrie 2800 feet high.

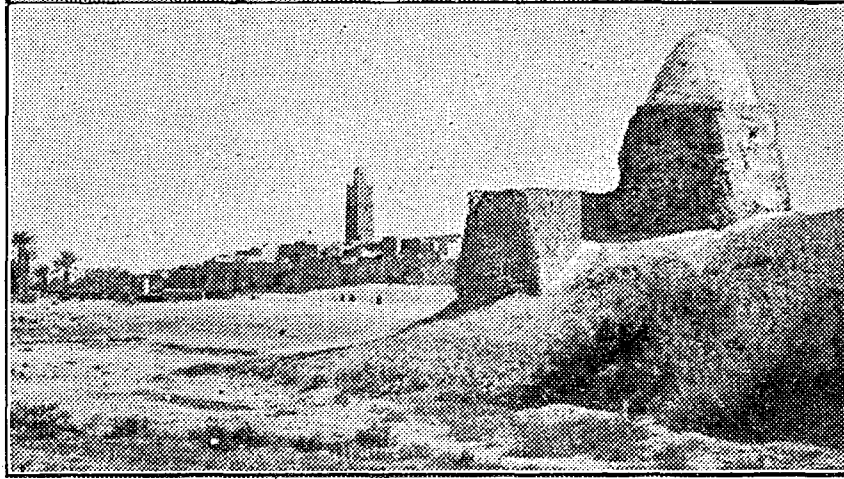
#### A Work of Danger

In some cases the readings have to be made every day. In any case the visits must be made regularly, and it sometimes takes the observer the whole day to reach a gauge and return.

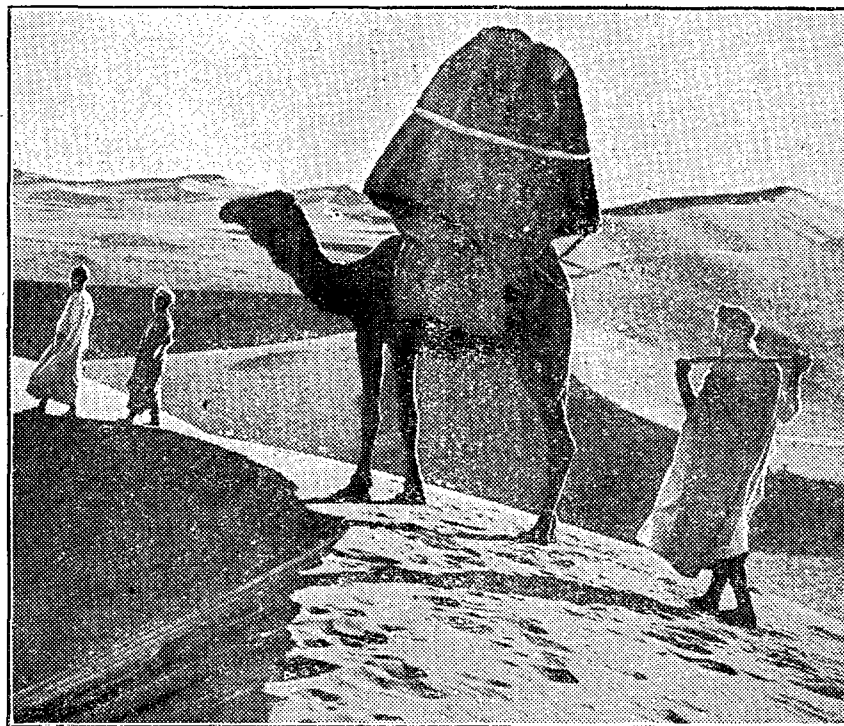
In summer weather this is often a pleasant excursion, but in winter the work is sometimes very dangerous, especially when the hills are covered with snow.

The men upon whom this work falls are usually shepherds, gamekeepers, or watermen, inured to exposure in all weathers, and able to find their track in conditions that would baffle any but an experienced mountaineer. They are doing, for meagre payment—in some cases for nothing at all—a noble work for science, and it is right that they should have their share of praise.

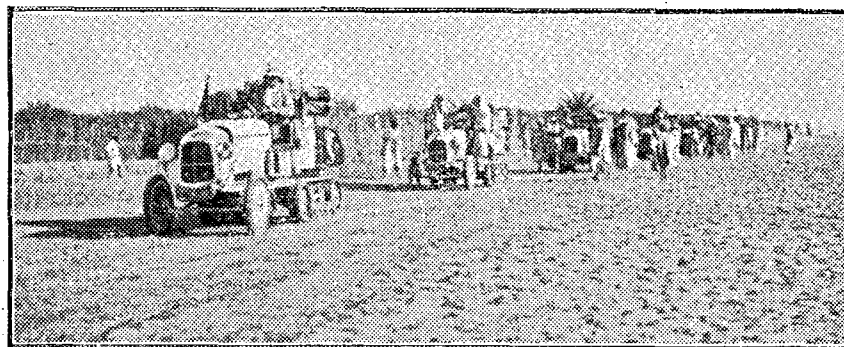
## ACROSS THE SAHARA BY MOTOR



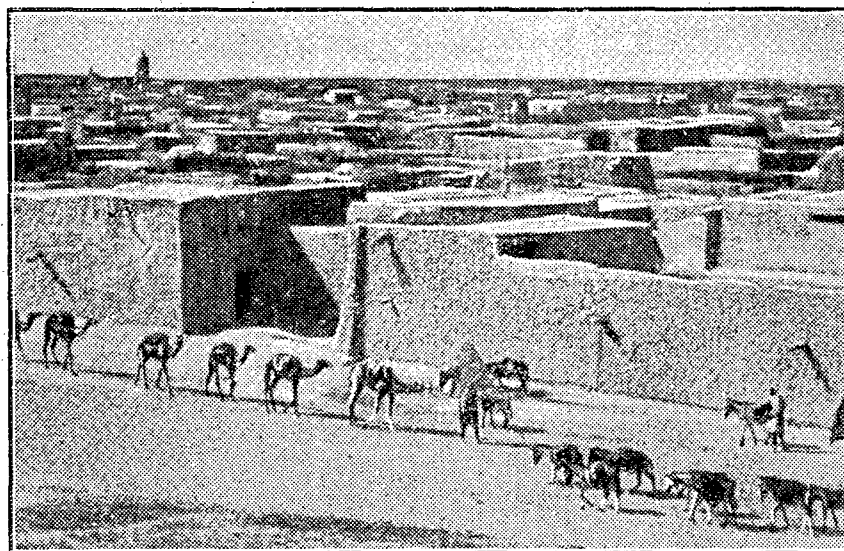
Touggourt, the end of the Algerian railway, from which the expedition started



The kind of country the motor-cars traversed



The expedition near Insalah



Timbuctoo seen from the north

The great motor-car expedition across the Sahara organised by the French has been successfully accomplished, and these photographs show the places where the travellers started and finished and the exceedingly difficult desert country they crossed. A map of the route which the travellers followed is given on page 4

## STRANGEST RAILWAY IN THE WORLD

Wire Rope More than 22 Miles Long

TRUCKS THAT DO NOT TOUCH THE EARTH

The most remarkable railway in the world was recently opened in North America, not very far from the Arctic Circle, and part of its power-system is a huge cable more than 22 miles long.

This railway links up the Premier Gold Mine with the coast, and is over 11 miles long. It is not an ordinary railway but an aerial tramway, the trucks running on overhead wires and being pulled to and fro by the great cable.

The Premier Mine is situated in a very rugged and inaccessible region, 15 miles from Stewart on the Portland Canal, which forms the boundary between Alaska and British Columbia.

Owing to the rough character of the country, the heavy rains in summer, and the severe snow and frost of winter, it has proved impossible to maintain an adequate road between the mine and the sea coast for the transportation of heavy ore.

A road was actually built, but, although fifty horses and two caterpillar tractors were in constant use, less than eight hundred tons of ore could be moved in the course of a year.

#### Stations in the Air

The owners came to the conclusion that under such conditions the mine could never be made a paying concern. They therefore decided to build an aerial tramway; and their expectations have been fully justified, for in three months this line has carried to Stewart 18,000 tons of ore.

The building of the tramway was a great engineering feat. It was found to be impossible to carry it in a straight line, and there are, therefore, three angle stations that turn it at angles of 46, 26, and 99 degrees. The cable carrying the trucks is an inch in diameter, and the one-thousand-foot lengths of which it is composed are connected by 110 nickel couplings.

The cable is supported on 153 towers, and the running speed of the overhead trucks is about six miles an hour. At the present time the railway is carrying ore at the rate of 1600 tons a week, or more than twice as much in a week as the old road with tractors and horse-wagons carried in a year.

The aerial railway cost only £50,000 to build, and it will pay for itself in the first year. Part of the railway is in British Columbia and part runs through Alaskan territory. See World Map

## FLAME-THROWERS TO DESTROY WEEDS

### A New Weapon for Gardeners

A novel way of keeping down the weeds that grow in the pathways of a public park is being adopted with great success at Alhambra, California.

The city authorities have equipped a wagon with a pressure tank, a kerosene reservoir, and a small petrol engine to drive a centrifugal blower.

From the tanks a mixture of vaporised kerosene and compressed air is delivered through hoses that end in long metal nozzles.

The vapour is lighted and a blast of hot and powerful flame continues to pour from the nozzle. This is directed upon the offending weeds, which are scorched up in an instant.

Two men with this apparatus can destroy as many weeds in an hour as they could root up by ordinary means in a day.

Some such drastic method of dealing with weeds is needed in a place like California, where the weather conditions and soil are so favourable that weeds spring up and spread almost fast enough to be seen growing.



## CAR CROSSES THE SAHARA

### THRILLING JOURNEY IN NORTH AFRICA

Opening Up a New Highway to Civilisation

SIX MONTHS REDUCED TO 20 DAYS

The stories of Jules Verne seem to be losing their quality of romance as the years pass by, for now that the great desert of Sahara has been crossed in 20 days instead of the usual six months the marvellous feats of fiction are surpassed by those of fact.

So easily and rapidly have the four caterpillar cars slipped over the 2250 miles of rock, sand dunes, and stony beds of long-dried-up rivers that one might almost imagine there were no obstacles in the way. If such an impression should arise, the photographs of M. Paul Castelnau, one of the eight Frenchmen in the expedition, are likely to set the matter right.

#### A Roadless Country

No ordinary car on four wheels could have crossed this awful roadless country, and it is safe to say that the success is due largely to the remarkable caterpillar contrivance which was fitted to the Citroën cars instead of the ordinary driving-wheels. These cleverly-contrived caterpillars are so constructed that they do actually move with the ups-and-downs of a caterpillar whenever irregularities of the ground make it necessary. But instead of crawling, as our army tanks did when they moved against the enemy's line, these caterpillars run with considerable speed.

#### Hidden in a Sandstorm

The cars left Touggourt, in Algeria, the most southerly point in the Sahara reached by a railway, on December 18. They halted for two days at Insalah to arrange the supplies for the long stretch without any petrol, food, or water other than that carried, and they reached Timbuctoo at 10 a.m. on January 7. Therefore, in 18 days of travelling, they had covered 2250 miles, an average speed of 125 miles daily!

When full accounts of the journey are available it will be possible to understand more fully what this speed means. One wireless message tells of a severe sandstorm in which the members of the party could not see one another; another describes the passing of the dead bodies of camels, and how, during a night journey, several big birds rose startled by the headlights. A desert of rocks was covered without any loss of speed.

#### New Door into Africa

The roving bands of desert tribesmen were not eager to attack the party, for one car carried two machine-guns, and each member of the party was armed with a rifle. As a rule the highwaymen of the Sahara come from great distances, even as far as from Morocco or the borders of Tripoli, and when working in parties of from 50 to 200 men are known by the name *rezzou*. Within the last few years four French expeditions have been massacred by these nomads.

Instead of this the party were gladly welcomed by the French officials and the natives of the famous town on the Niger where the journey ended, and it may be said that a new-door leading to the heart of the great continent of Africa has been dramatically flung open.

There is now little to prevent the repetition of the journey. As knowledge of the country grows better routes will be found, French military posts will probably be placed at intervals along the entire distance from the Niger to Algeria, and then will follow the road engineer so that the crossing of that strange world of mirage, thirst, and savagery will become almost easy.

There have been schemes for railway construction in existence for many

## OUR PLACE IN SPACE

One Little Star in 1000 Millions

SYSTEMS SWINGING TO AND FRO

Professor Turner told the audience of children at his Royal Institution lectures how they would have to address a letter to him if they were living somewhere out in the middle of space. They would have to address him at Oxford, England, Europe; and then add:

The Earth,

The Earth-Moon System,

The Solar System,

The Milky Way System.

"Our Sun," the professor explained, "is a dwarf star in the great system of the Milky Way, which is itself an immense flattened star cluster, containing, perhaps, 1000 million stars.

So great is this number that if a grandfather's clock were to give one tick for each star it would take the clock over thirty years to tick them all away.

It was Kapteyn, a Dutchman, who discovered that the stars in our great cluster are not moving in haphazard fashion, but in two great streams.

We can best explain this, the professor said, by supposing that the stars in the Milky Way are swinging to and fro under the action of gravity, like a pendulum. Those going in one direction form one stream; the others, swinging past in the opposite direction, form the other.

There is, too, a third class of stars in the heavens—stars which do not seem to be moving in any particular way. These are the stars which have just come to the end of their swing, and are pausing before they start back again.

## DUTCH EEL BOATS

The Old Order Changeth

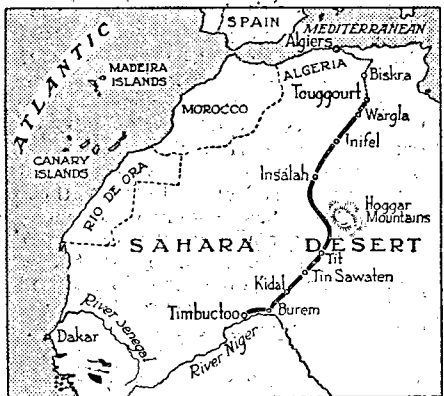
Since the days of Queen Elizabeth Dutch eel boats have been berthed outside the Custom House on the Thames at London, and have been quite a picturesque feature of the river; but now they are to be replaced by modern motor eel boats. The Dutch fishermen in charge capture about ten million eels a year. The boats have for centuries had the right to berth at the same spot in the Thames, one of the conditions being that at least one boat must always be there.

The right was granted in Charles II's reign because, when other foreign shipping was scared away at the time of the great plague, the Dutch boats continued to bring eels to London. *Picture on page 12*

Continued from the previous column

years, and one of them, the most ambitious, is planned to follow roughly the route of the present expedition with a great branch line reaching out south eastwards to Lake Tchad. This could easily be linked with a British railway in Nigeria, and by this means would join West and North Africa, a hope which has long had a place in the day dreams of French statesmen.

Railways, naturally, put an end to brigandage, and bring all sorts of changes



The route across the Sahara

and new enterprises. It is not too much to say that this opening of a new entrance to Africa is the first chapter of a new volume in the story of the civilisation of northern Africa. *Pictures on page 3*

## OPERA AT HOME

WIRELESS MUSIC FROM COVENT GARDEN

Buzz of Theatre Talk Heard at Your Fireside

THE NEWEST WONDER

By Our Marconi House Correspondent

People with wireless sets have been enjoying a wonderful time of late.

First the concerts from Marconi House, then the orchestral music sent out by the broadcasting station, and then grand opera straight from the footlights of Covent Garden.

What next? Perhaps we shall be able to sit by our fires and revel in the Queen's Hall concerts.

At Covent Garden the microphones—the instruments which collect the sounds to be sent by wireless—are arranged down by the footlights. At the other end they are connected to the wireless station at Marconi House by a cable, and the action of the sounds upon them affects the wireless waves in such a way that when they strike our receiving aerials we can work backwards, so to speak, and transform the electric waves into copies of the sound waves beating against the microphones at the theatre.

#### How to Listen In

Thus we are enabled to listen to the music and singing and the laughter, even to the applause of the audience. We can hear the orchestra tuning up and the buzz of conversation in the body of the theatre. Then comes a hush, then a burst of clapping—the conductor has appeared. Another hush. The rap of the conductor's baton is plainly heard. Hush again. The baton is raised. Then comes the first majestic strains of the overture, and we sit back blessing Marconi. The overture ends and the applause breaks out again, followed by a singer; and the opera proceeds.

Here are a few hints as to how the reception of wireless telephony may best be accomplished. If you are within five miles of a broadcasting station a simple crystal receiver used with a good outside aerial is excellent. Crystals give the clearest signals.

If you use a valve receiver, do not use more valves than are necessary to produce comfortably loud results. You lose by needless magnification.

Always take the music or speech through telephones rather than by passing them into a loud speaker. The loud speaker is useful for delivering concerts to an audience, but individuals receive more satisfaction through the telephones. Good strong signals will bear as many as ten pairs of telephones.

## SEEING IN A FOG

Secret Ray in Which Darkness is Made Visible

NO MORE COLLISIONS IN THE CHANNEL?

Everyone who has experienced a "London particular," as we call our London fogs, or has crossed the English Channel with the sirens hooting, is able to realise how dangerous and bewildering a fog can be, and how great are the possibilities of the new fog-piercing ray acquired by the Admiralty.

It is claimed that ships fitted with a special apparatus of which the Admiralty has the secret, can see one another a considerable way off, even in the thickest fog; and obviously the rays could be used by aeroplanes as well as by ships.

What the rays are, and what apparatus is required are secrets carefully guarded, but as the rays require apparatus to render them visible it may be surmised that they are either infra-red or ultra-violet rays, made perhaps to fall on some luminous substance, and they will, of course, be made known in course of time and given to the world for the good of humanity.

## IN THE VERY LONG AGO

EGYPT THE ANCIENT

What the Priest Said to the Traveller by the Nile

TREASURES SAVED BY THE GREAT RIVER

The discovery made by Lord Carnarvon's explorations recalls a conversation recorded in ancient literature and said to have taken place in Egypt.

When Solon, the great legislator, was on his travels, he visited the Nile region, and came to a temple where he was received with great honour. The goddess Neith was the presiding divinity. She, as Solon was informed, represents Athena, the patroness of his own city. Afterwards he spoke on the subject of antiquities with one of the priests.

He told of many ancient monuments existing in his native country, and went on to relate some of the earliest traditions preserved there. When he concluded, the priest smiled.

"Ye Western folk are children ever," he replied. "Your countries have nothing old, as here we reckon age, nor any knowledge that has grown grey with time. The reason is this.

#### Cities Swept Away

"In past ages many great catastrophes have occurred. Floods have swept away cities, and earthquakes have swallowed them up. In this way, and from similar natural convulsions or volcanic fires, all really ancient records have perished.

"But here the Nile is our safeguard. The river carries off the great floods that would otherwise long ago have overwhelmed the country. Therefore our memories go back to days far earlier than ye Western peoples have any knowledge of. Through dynasty succeeding dynasty wisdom was gathered here, skill in craftsmanship developed, and works of elaborate and delicately finished art were accomplished."

The tomb of Tutankhamen has already yielded, after 3200 years, objects wrought with amazing skill and beauty of design; and it is remarkable to recall this story from the very long ago while we wait for the news from the tomb.

## FREDERIC HARRISON

A Grand Old Man

The death of Frederic Harrison, who passed away quietly in his sleep from the world in which he had been so active a figure, leaves a blank place for all who have known him through his writings.

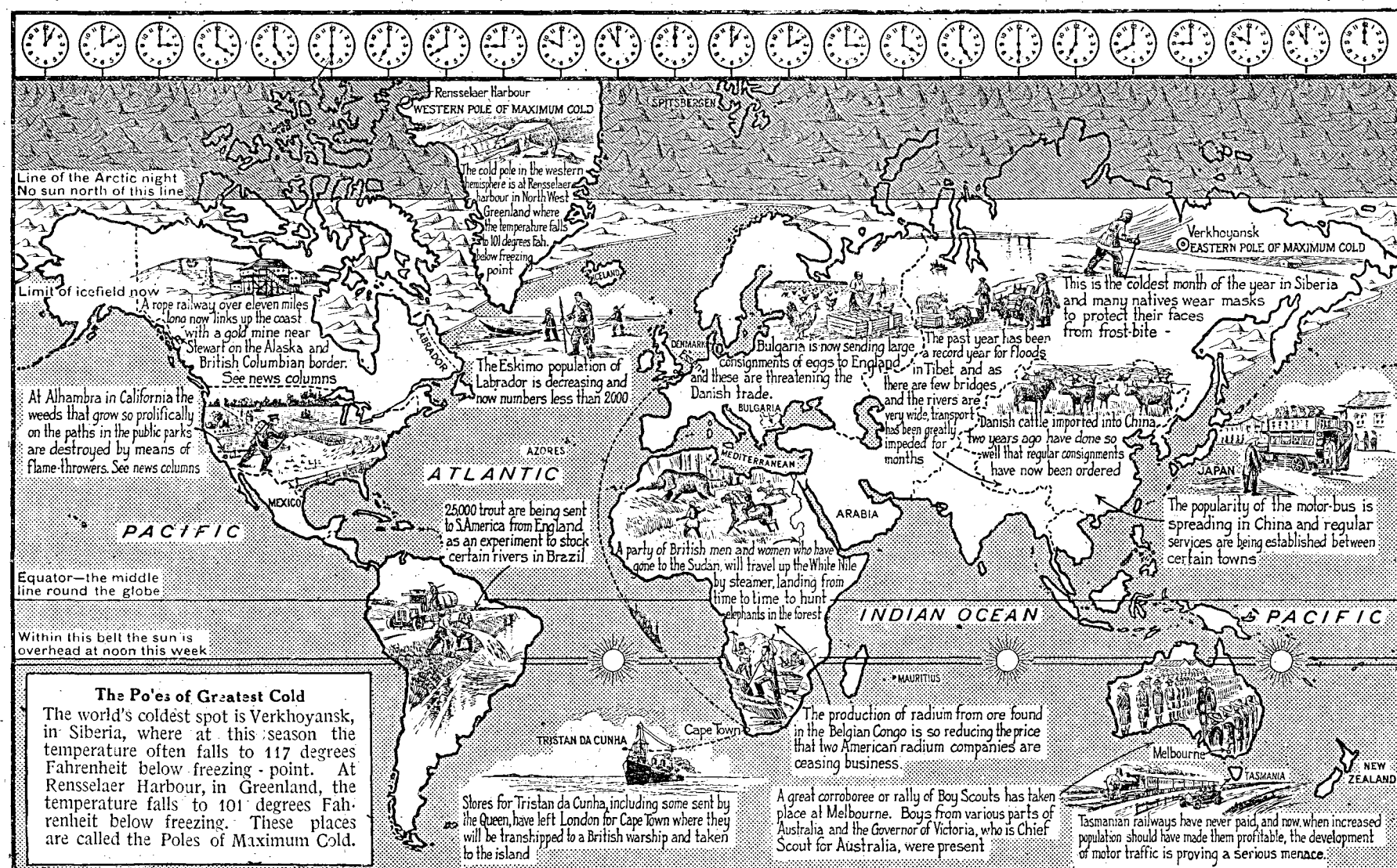
For sixty-five years he had been a notable man, of independent mind, generous enthusiasms, and vigorous literary craftsmanship. His interest in the world's welfare was as alert in his ninety-second year as it was when he crusaded for good but unpopular causes as a young man from Oxford. His opinions changed naturally somewhat with age, but not so much as might have been expected.

Frederic Harrison was one of the modern men whose intellectual vigour changed the popular conception of the wearing effect of the years. As with Gladstone, there seemed no reason why he should ever be worn out.

Though he was not quite one of the greatest of the great generation of mid-Victorians—not in the very first line with the two still left, Lord Morley and Thomas Hardy—he was in close and fitting comradeship with the greatest, a broad and virile man who sustained splendid memories, though no single work of his will remain a classic.



## PICTURE-NEWS MAP OF THE WORLD SHOWING THE POLES OF GREATEST COLD



## THE CHAR-LADY

## Kindness Brings a Windfall

Like rice sown on the waters and found after many days have been the good deeds of a kind-hearted hotel proprietor, Mr. Christopher Long.

An old Irish woman who did odd jobs about his hotel in Aldershot was noticed by Mr. Long as being herself kind and pleasant, and he treated her suitably and saw that she was well fed.

Presently she wanted to go back to Ireland, and he helped her by providing her with food for her journey and a ten shilling note in her pocket. As she left him she declared she would never forget his kindness.

Now the old lady is dead in her own country. So far as Mr. Long knew she was quite poor and not earning enough to enable her to save anything at all. But she had, at any rate, saved enough to leave in her will £180 to the Englishman who had been kind to her, in her supposed poverty.

On both sides it is a happy illustration of life as it ought to be—brimming over with kind feeling.

THE DEAN'S LONDON  
City of Palaces and Slums

Dean Inge has a lasting affection for the Middle Ages, as the period of romance and charm and beauty, and he now adds to his praise in general a special song of regret for the London of that age. Medieval London, he says, was a lovelier city than Oxford, Edinburgh, Florence, Venice!

But the plain truth is that the good dean's London was a city of a few fine palaces and beautiful churches, with a teeming array of wooden hovels, sunless in summer, unwarmed by coal fires in winter; a city of open sewers, of foul, polluted drinking water, where ague and plague were never absent, where the conditions were so horrible, in the streets and in the houses of rich and poor alike, that the great scholar Erasmus dared not come from Holland to live permanently among us.

## STEEL CABLE CRASH

## Extraordinary Accident at Sea

The Cunard cargo boat Valacia met with an extraordinary accident on its last voyage from London to New York.

At the end of the year it shipped a huge sea, and the weight of the wave tore away a winch carrying 900 feet of thick steel cable, hurling it into the fore-castle. At the same time the water poured in and flooded the fore-castle.

The electric light wire had been cut by the winch in its wild career, and the seamen in the crowded fore-castle had to fight for their lives in the darkness: Not only were they threatened with death by drowning, but the heavy winch lurched and crashed around.

Some managed to escape from the great Juggernaut by clinging to the beams of the roof, but before the winch and cable could be secured two men were killed and nineteen injured. There was no doctor on board, and the captain and a steward had to sew up the wounds of the injured.

A VICAR'S GOOD IDEA  
Civic Training for Children

An interesting experiment in the civic training of children is being carried on by the Rev. P. Moss Webster, vicar of St. Mark's, Suddal, near Halifax.

A Junior Church Council has been formed. The senior scholars of the Sunday school elect a People's Warden; the Vicar chooses a Vicar's Warden; and the scholars elect six boys and six girls as the Junior Church Council.

The Junior Council meets and conducts its business in the same way as the Church Council does its business. Resolutions are sent forward from the Junior Council to the official Council.

In this way interest in the business side of Church work is stimulated and administrative ability is developed early.

At children's services the junior wardens do the wardens' work, and the councillors act as sidesmen, take the collection, and account for it to the wardens proper.

## A GIRL'S FINE SENSE

## Heroism at the Telephone

A most splendid act of bravery and presence of mind is reported from New York, the heroine being Marie de Saovia, a young telephone girl employed by the Italian hospital.

A tank of ammonia in the basement of the hospital under the telephone room exploded, shaking the building and filling it with fumes.

The worst place in the hospital was the telephone room, but Marie de Saovia was the first to know what had happened, and this is what she did to grapple with the difficulty.

She rushed to the door and shut it to keep out some of the fumes; covered up her head and the telephone instrument, and then called up each of the wards one by one to tell the nurses to shut the doors and open all the windows and ventilators. Then she called up the fire brigade and the police.

When her room was entered she was unconscious from the fumes. Later she revived. Through her promptness and pluck 63 patients were protected.

## THE SIX TURTLES

## What They Do for a Town

Among the properties of the town of Hillsdale in the United States are six mud turtles, used for cleaning out drains.

Engineers in small American towns have always experienced trouble in keeping these narrow street drain pipes from becoming plugged with mud and silt, but now the Public Health Authority at Hillsdale has evidently solved the problem in a really novel way.

If one of the drains in that enterprising town becomes too clogged to be cleaned by water pressure, he starts a mud turtle burrowing along it, and that useful animal makes short work of the trouble. The turtles are controlled by a light twine harness.

Glasgow not long ago was making use of insects in her drains; shall we soon have town councils running their own zoos for municipal purposes?

## TRAINS FROM ITALY TO LONDON

## Who's for the Ferry?

The much-talked-of, and partly tried, train ferry from our island home to the Continent is really coming.

It is thought that in six months it will be possible to run a train, say, from Italy to Zeebrugge, in Belgium; there drive it upon a sea-ferry floating stage; join the ferry platform up with the English railway at Harwich; and then run the train direct to London, without unloading the goods during the journey.

The train ferry was used with excellent effect during the war. Much military material passed safely by that means from Richborough, in Kent, to Dunkirk, in France. But, apart from the war service, Richborough and Dunkirk have not proved the best places for the interchange of ferry trains. Harwich and Zeebrugge are thought to have a better position, and hence the new start in train-ferry experiments.

It is said that having through traffic, without unloading and loading on the coasts, will make a saving of from fifteen shillings to a pound on each ton of goods carried. If that is so, home-grown produce will have to be carried by our railways more cheaply to our markets if it is to compete.

## EGYPT

## A Difficult Situation

Lawlessness in Egypt is giving cause for grave anxiety. Murder of Europeans is hushed up by the people, who will not give information, and witnesses are afraid to offer evidence.

So far as the people of Egypt from understanding the conditions and blessings of free government that General Allenby is obliged, for protection of life, to resume temporary control of the situation, and by proclamation to rule with the firmness of which the native Egyptian Government seems incapable.

He has announced death as the penalty for threats to witnesses.



## CHILDREN'S NEWSPAPER

JANUARY 27 1923

## Imagination

MUCH of the suffering in the world is due to lack of imagination.

"He jests at scars who never felt a wound," and many people have little sympathy with pain because they have never felt it.

We hear that more than a million men can get no work, and are living in squalor and poverty, but most of us, not having known what hunger and poverty and despair mean, do not realise the tragedy of it. We hear of a bomb dropped into a crowd, but few people have enough imagination to picture the shambles it produces.

Indeed, there is something in the human mind which makes it refuse to face terrible realities, and makes it paint horrors in rosy colours. The mind is willing to picture the heroic and gallant side of war—the bugles blowing, the banners flying, the cavalry charging—but it shuts its eyes to the cruelty and pain and misery that war involves. The enthusiasts for war are not the heroic men who have known what war is, but generally politicians and journalists and poets, who sit in comfort, and are not likely to face the hideous realities.

It is the same with Drink. People prefer to think of wine "tasting of the country, and dance, and song"; they prefer to think of alcohol in its fair and friendly aspects, and will not face the misery and disease it brings wherever it goes. Yet if they could realise the evil of Drink they would see the matter in quite another light.

A strong, sane, honest imagination is one of the greatest spiritual gifts a man can have. Without imagination it is impossible to understand life and to sympathise with other men and other nations. Hatred, war, revolution, cruelty, are all the fruits of lack of imagination.

But some people entirely lack imagination, and the only thing then is to bring the realities home to them. We are set thinking about this by an American judge who has actually taken about thirty dangerous motorists who had caused accidents by their reckless driving to see the results of this recklessness. He took them to the children's ward of a hospital where about thirty boys and girls, crippled by the accidents, were under treatment. The result was that many of the men, who had been sullen and bitter when they received their sentences, became penitent and vowed that never again would they drive recklessly.

Let us all try to acquire and cultivate the great gift of sane, truthful imagination, enabling us to see things as they really are, and so to have sympathy for all living creatures.



## THE EDITOR'S TABLE

Fleetway House, Farringdon Street, London

above the hidden waters of the ancient River Fleet, the cradle of the Journalism of the world



## Two of Them

ENGINEER WOODS, of the Folkestone Fire Brigade, was lowered over the cliffs by rope a distance of 300 feet to save a dog in peril of drowning. It was a retriever. So was he. More rope to him for a good fellow who fears neither fire nor water.

## To a Million People

IT has been calculated that nearly a million people stood watching a few men play football one day not long ago, and that they paid over fifty thousand pounds to see the play.

We believe this fifty thousand pounds would endow for ever one hundred children's cots in hospitals.

May we suggest that these million people stay at home next Saturday and send their football money to the local hospital?



The Turks and the Russians have been putting their heads together at Lausanne

## While the People Toil

THE fate that will in course of time meet our new battleships has just befallen an oil-tanker in the Pacific.

Whether a ship is worth having depends on what she can carry and on the pace she can go, compared with her cost in fuel.

If she will not carry a generous cargo, or is slow unless she is stoked heavily, she soon comes to an untimely end, for nobody wants her.

That has been the fate of the old Circassian Prince, once a flourishing oil-tanker, able to take her turn with the best. As oil-tankers have now been improved out of all knowing, the Circassian Prince became hustled aside to tramp the far-off Pacific coast. But even there the improved rivals followed her, carrying more, carrying it faster, and carrying it for less.

Last stage of all she lay by idle in a sultry port, heaping up harbour dues and costs of maintenance till she became an impossible extravagance, and was scuttled in the deep Pacific.

That is the way, let us remember, of half the battleships that are built. The people toil to pay the taxes for them. The people toil to build them. They sail the seas a year or two while the people toil to maintain them. And in the end the battleship is out of date, and the people toil to pay the cost of breaking it to bits.

## Piping Times

A BOY of twelve, still at school, has been appointed organist of a church near Guildford, and at Dunston, in Norfolk, a girl of ten plays at four services every Sunday.

These are clear indications, we think, that children have a natural aptitude for key industries. We should be glad to hear that the Guildford schoolboy has his headmaster for blower.

## Tip-Cat

AN original correspondent asks what the public wants. Generally something different from what it has.

ALL Europe is now saying its prayers—"Forgive us our debts."

A PHOTOGRAPHER finds that children resent being photographed. So do some adults, when they see what they look like.



PETER PUCK WANTS TO KNOW  
If the open air ever closes

THE coal age is past, says an electrician. The coal merchant will be getting the sack.

RAILWAYS are to

issue cheaper workmen's tickets. Where will they find the cheaper workmen?

A MAN is what he eats, says a philosopher. Does that make some of us hard-boiled eggs?

A SOCIAL student notes that girls no longer care for scent. No doubt he has seen them sniffing at it.

A MAN is said to spend more than half his life on his feet. He simply cannot get off them.

THE population of Great Britain is derived from two great races. That is why it always wins in the long run.

A CORRESPONDENT writes to say he has met six different sorts of policemen. All good sorts, we hope.

## A Real Good Time

THREE people were talking loudly at the next table, and we could not help hearing that they had had "a real good time"; they had killed 750 birds.

Think of it! All the lovely colour, all the grace and joyous movement, all the music, all the tense love of life and liberty, of seven hundred and fifty birds! What fairer sight has this lovely world to offer us?

And then think of 750 limp, dragged, lifeless things. One man shudders at the change. Another thrills at the thought of beauty and life extinguished. It is his idea of a real good time.

A sad world at times, as we march on to the kindly age in which no human heart will be thrilled with joy at the thought of the pain and death of a bird.

## Poems of Peter Puck

## Why Not Try It?

SOME folk there are who'd right the world

With petrol-rags and matches,  
While others deem revolvers best,  
And some believe in patches:  
And what with those who'd burn and shoot

The opposition party,  
And those who fuss with patch and darn

To keep the old thing hearty,  
This world is often brought to tears,  
And weeps and weeps for years and years.

AND yet the Sun was made to shine

And Earth to grow her roses:  
Why is it these improvers must  
Pull one another's noses?

Perhaps if they would cease to fight,

And try to be forgiving,  
Instead of putting others right  
Themselves try Christian living,  
This world might pluck up heart to smile

And leap each trouble like a stile.

## What He Feared

This curious little story of a plain man is so interesting that we cannot help giving it, whatever the moral may be. It is sent to us by a well-known author.

THE other day my friend Colonel C— returned from West Africa, and sent me a card giving the address of his lodgings. I went to call between 5 and 6 o'clock.

It always strengthens my moral fibres to meet this intrepid man, whose gallantry on the field of battle won him the greatest of all distinctions, and whose courage as a hunter of big game is well known.

On the present occasion I found him so stimulating that I stayed till it was nearly eight. Neither of us had noticed the time, and when I exclaimed at the lateness of the hour he started, and, in a moment, was a different man—anxious, agitated, and rather alarmed.

"I hope I haven't interfered with your engagements," I said, surprised by his change of manner.

"Not at all," he assured me. "I'm dining here."

"Perhaps you could give me a chop?" I suggested.

"Yes, of course. At least . . . To tell you the truth . . . Well, we'll see what Mrs. Mullins says."

He rang the bell, and afterwards fussed about the room in evident distress, finally going out to the landing to meet Mrs. Mullins on the stairs.

I heard their voices. His was like a nervous schoolboy's.

When he returned he was greatly relieved. "It's all right," he said; "she can manage it."

This man who can face a tiger was afraid of a landlady.

## How to be Happy

The object of life is to be happy.  
The place to be happy is here.  
The time to be happy is now.  
The way to be happy is by making others happy.



## THE KINEMA AT ITS BEST WATCHING THE CLIMB UP EVEREST

Three Months of Adventure  
Seen in Two Hours  
FILM EVERYONE SHOULD SEE

The C.N. strongly advises its readers to see the film and photographs of the Mount Everest Expedition.

A party of picked men set out on the most adventurous task of exploration left for mankind to do. They pass through remote lands few have ever seen, and we shall never see. They see strange sights all the way. They face many dangers and brave death in unusual forms. They nearly reach victory, yet have to acknowledge defeat, but they are not beaten in spirit, and they mean to try again.

### Epic of Endeavour

It is a real epic of perseverance and endeavour, and, most amazing of all, they have made it possible, these splendid men, for any one of us to go through it without any of the trouble they had, and to be in close personal touch with the very men who did these deeds and made this record.

Here we get the kinema at its very best, passing realities before our eyes instead of concocted scenes or flimsy fancies. We see for a little bit of silver what men are contented to spend a thousand pounds to experience.

Every minute of this panorama and the accompanying talk by members of the expedition is packed with information. The journey is lived with us. Even those who are contented with momentary sensations are pleased, and reflective spectators are provided with all kinds of material for thought. Such a profusion of advantages should not be missed.

### Travel by Armchair

In London Captain Noel, the official photographer of the Expedition, has given the first lecture twice daily. He took his instruments up to 23,000 feet. Mr. T. Howard Somervell, the surgeon, who has given the second lecture twice daily, was one of three who broke the world's record for high climbing at 27,000 feet, a record beaten by a few hundred feet shortly afterwards. Both lecturers are successful in manner, matter, and spirit.

The armchair traveller is taken through the forest scenery of the lower Himalayan slopes, by snow-fed torrent routes, up to the bleak, bare, wind-swept Tibetan Plateau, with its curious human life so strangely organised into a civilisation of its own. Not only do we see the outward forms of Tibetan humanity, but we have glimpses of its mind, its aspirations, its art, its music, and, most surprising of all, its invincible jollity in the midst of Nature's ceaseless inclemency.

### A Great Thrill

And then Mr. Somervell takes up the story of the actual climbing, and lightly tells of the still severer inclemency of the world's topmost ridge. Everest itself, one feels, is no impregnable height through steepness. It is the powers of the air and not of the peak that are to be feared as possible bafflers of man's ambition. But they will be eluded some day, when they are for the moment at rest, and man will triumph.

That the triumph will come soon, and that Mr. Somervell will share in it, is felt by every watcher of this last climb, and everyone who sees what heroism has already done contributes by his payment something towards the resources of a future victory.

Your money for the film goes to the victory over Everest, so that for our country's sake, and its conquest over Nature, we should see this great film; but especially should we see it for its own sake, for it is among the greatest thrills that London can afford.

## RAINING FROGS AND TOADS

It has been raining little toads in France. For two or three days people in the neighbourhood of Chalon-sur-Saône have been horrified to see these tiny visitors descending from the skies.

There is nothing mysterious in such an event. As C.N. readers know, little toads, little frogs, small fishes, and other things which haunt shallow waters or the surface of deep waters, are from time to time caught up by whirlwinds, and deposited where the wind wills.

Seeds, dust, powdered lava from volcanoes, insects, wearied birds, all ride the storm and come as wonders to the simple upon whom they alight.

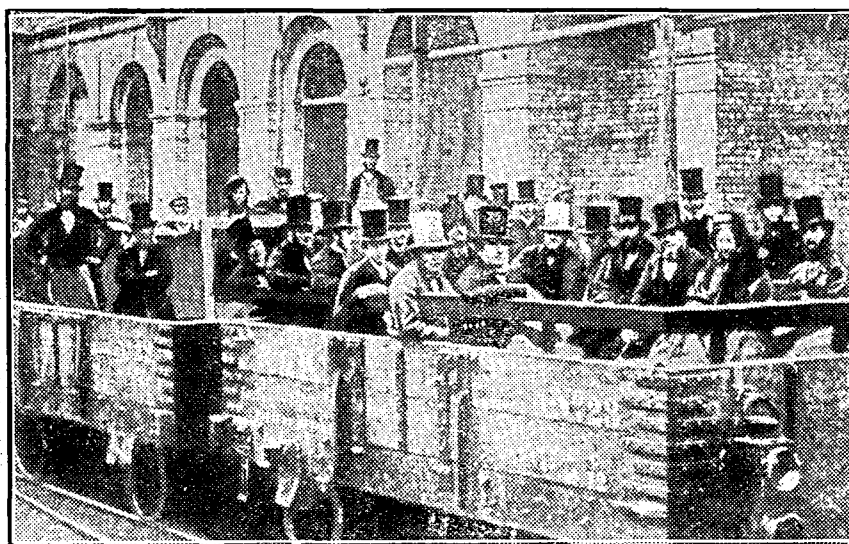
The results of such natural wonders are sometimes curious and surprising.

When last the question was under discussion one of our South African readers told us of the animal life observable in some of the Rand mines from this cause. He mentioned frogs and toads, fishes, and, we believe, lizards.

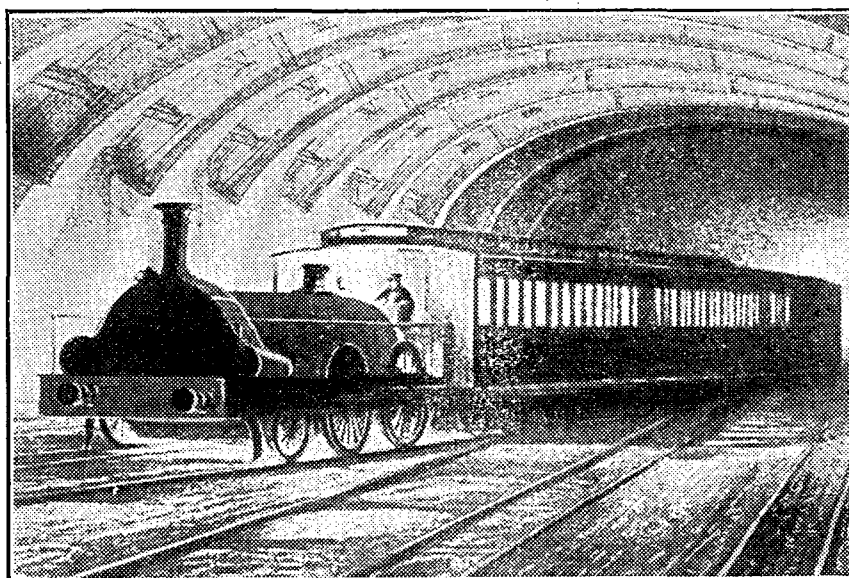
But in a wider sense the effects are interesting. A storm such as this one in France might conceivably be strong enough to carry tiny toads and frogs out to sea and deposit them on islands.

We get birds every year from America in the same way, and it is easy to see how over great continental masses of land seeds of good and ill may travel—seeds of weeds to plague a countryside; seeds of desirable growths to prove a blessing and a source of wealth.

## MR. GLADSTONE GOES FOR A RIDE



The trial trip in 1863. The passenger between the two men in white hats is Mr. Gladstone



The earliest type of passenger train on the Metropolitan Railway

The Metropolitan Railway in London has just been celebrating its diamond jubilee, and these pictures show scenes on the railway—London's first underground line—at the time of its opening sixty years ago

## NEWS FROM EVERYWHERE

Nearly a million and a half people visited the London Zoo during 1922.

An Italian daily newspaper, *Il Mondo*, is publishing a translation of Dickens's *Dombey and Son* as a serial.

### Two Vicars in a Century

Penally, near Tenby, which has just lost its vicar after fifty years of service, has had only two vicars in a century.

### January Blackberries

Two quarts of large ripe blackberries were gathered in the middle of this month at Blaenau Festiniog, North Wales.

### An Amazing Meteor

An amazing meteor was seen in various parts of the Punjab, India, to flash across the sky. Its trail was visible for several minutes, and a loud rumbling was heard from the direction in which it disappeared.

Saskatchewan produced last year the largest wheat crop in her history.

The Olympic's Christmas mail for New York consisted of 9000 bags, containing a million letters.

### The Ship of Columbus

A reproduction of the ship in which Columbus discovered America is to be exhibited in the South Kensington Museum as a gift from Spain.

### Changing the Face of England

The floods of January changed the face of England for a time. Airmen say that in the Midlands and the North were inland seas and rivers miles wide.

### Snake Among the Bananas

A cargo of bananas from Colombia, South America, was being unloaded at Hull the other day when a snake 26 inches long was found coiled round the stalk of one of the bunches.

## UNKNOWN RACE OF BUILDERS DISCOVERY BY TWO CHINAMEN

Ants that Make Cement and Build Up Concrete Walls  
NEW CHAPTER OF NATURAL HISTORY

Two Chinese investigators have lately read a paper at the Rockefeller University in Pekin on their discovery of a wonderful family of ants, which produce cement and concrete.

Mr. Wung Chia Pin and Dr. Chang Yu Hsiang have found that these ants on the banks of the Yang-tse-kiang have formed a concrete honeycomb about a hundred yards wide and up to fifty yards deep, and of remarkable strength considering how thin are the walls of the numerous chambers and passages.

The ants appear to be of two kinds—those chiefly engaged in building and repairing the structure, and those concerned with the general welfare of the colony. The former may be divided into four groups of transporters, cement-makers, mixers, and builders.

### An Insect Mystery

The transporters bring the particles of sand, lime, and clay into the structure. The cement-makers appear to have a very saline saliva, which converts limestone into a material closely resembling eggshells. The exuded material is laid on moist clay ready to be treated by the kneaders, who mix the materials thoroughly and impregnate it with saliva containing a powerful ferment, which is of such a nature that, when the pellets of material have been stored for some time in a warm place, they are converted into a cement.

The storage and fermentation of the material thus serve the same purpose as heating a mixture of limestone and clay to a high temperature, which is the human way of manufacturing cement. How or why this saliva should exert a chemical action, which can only be obtained by human beings at a high temperature, is not known, but the investigators claim to have established the fact.

### Will the Ants Work for Man?

Builder ants mix the cement with sand, and so form a concrete which appears to be of quite exceptional strength. To obtain sufficient quantities of the freshly-made cement the investigators provided artificial and removable foundations for the ants to work on—similar to those used in bee-hives; but much larger.

These ants only work during the season of the plants on which they feed. During the winter they hibernate. It appears possible, however, to feed them on some preparation of soya bean, and by this means to keep them at work all through the year.

It is far too soon to realise the true value of these investigations, but if the ants can be induced to work in large quantities, and in other parts of the world, the value of their product may soon be very great.

## TINO

### A Feeble King

"Mankind wars not with the dead; it is a trait of human nature for which I love it," said the gentle Charles Lamb, and in that spirit the world received the news of the death—in Sicily, from a stroke—of Constantine of Greece.

His kingship, emphatically, was not for the good of the world, and least of all was it good for Greece, but the reason for that was probably want of ability rather than want of heart. A feeble king is a great danger in troublous times; but Constantine paid the penalties of weakness so fully that the world may "let him pass" without further censure.



## WINTER THUNDERSTORMS A MYSTERY FOR THE WEATHER MEN

Taking a Census of the  
Lightning

### CONDITIONS THAT UPSET WIRELESS

Are thunderstorms more frequent in summer or in winter?

Most of us would have little hesitation in answering: in the summer; but there seems to be some doubt on the point. At any rate a census of winter thunderstorms which has been made for some years past shows that they are more numerous than had commonly been supposed.

The investigation by means of which this fact was brought to light arose in connection with wireless telegraphy.

One of the greatest difficulties with which the wireless operator has to contend is the interference with messages by what are known as *atmospherics*, disturbances which at times make it impossible to decipher messages.

#### An Interesting Discovery

These *atmospherics* are not yet fully explained, and the difficulties which they occasion cannot be overcome until we know more about their origin. During the war wireless telegraphy became so important that an effort was made to study the matter more fully.

The first point to ascertain was the direction from which the disturbances reached the receiving station. This problem was more or less solved. An interesting discovery followed.

It was found that very often the *atmospherics* appeared to arrive from the direction of some place where, at the time, thunderstorms were in progress. It was not, of course, possible to be certain that the disturbances were actually being caused by the thunderstorms, but it was worth while to try to find out if this was so.

#### Many Observers on the Watch

This led to the idea of a census of thunderstorms during the winter, when for various reasons the investigation was easier than during the summer.

Accordingly, since 1916 a large number of observers in all parts of the country have been asked to take note of all occasions on which thunder was heard or lightning seen.

The reports were collected only in the three months January, February, and March, covering a period of 90 days each year, or 91 days in leap year. The number of days in these three months on which thunder or lightning occurred in some part of the British Isles was surprisingly large:

In 1916 on 64 days out of 91

In 1917 on 24 days out of 90

In 1918 on 20 days out of 90

In 1920 on 39 days out of 91

No observations were made in 1919. Thus, out of 362 days in winter electrical disturbances occurred on at least 147 days, or, on the average, 2 days out of every 5. So far as is known this is a frequency as high as in summer.

#### Releasing the Electricity

The cause of thunder and lightning is no doubt the same in both winter and summer. The electrical condition is believed to be induced by very rapid condensation of water vapour. This produces large rain-drops which break up as they fall. It is during this that the electricity is liberated.

In summer rapid condensation is brought about by the ascent of overheated air during spells of calm weather.

Winter thunderstorms are caused by masses of cold air forcing their way under banks of warm, moist air. These conditions can occur in the roughest weather, and the terrible winter gales of the west coasts of Ireland and Scotland are sometimes accompanied by very violent lightning and thunder.

## THE BRAVE NEW ZEALANDERS CHIEF SCOUT AND THE MAORIS

Gallant Foes Who Became the  
Best of Friends

### ROAST PARROT FOR DINNER

By Sir Robert Baden-Powell

The Maoris are the original natives of New Zealand.

In the old days they were a splendid race of brave and chivalrous warriors. They had many of the manners and customs of other wild tribes, and even did a certain amount of eating of other people; but they were also a very kindly people and showed a sporting spirit when they went to war.

I have met with great kindness myself at the hands of the Maoris, and one tribe presented me with a whale's tooth which they regarded as a charm, for it was supposed to have brought luck in war to their fighting chiefs for hundreds of years. Now that they no longer needed its help, being at peace under British protection, it was presented to me, and I still keep it among my treasures.

#### The Little Jade Ornament

I also have a little jade heikiti, or mascot, which was given to me in New Zealand, and which, if worn round the neck, will prevent me, so I was told by my Maori friends, from getting drowned! And I was also given a woven grass cloak, ornamented with feathers, which, though not a garment I could wear in Piccadilly, is a very swagger dress in the backwoods of New Zealand.

When our troops fought them in 1867 the Maoris proved themselves brave enemies, and many good stories are told of their sporting character.

I was told—though I cannot vouch for the truth of it—that when the British had surrounded one of their fortified camps the Maoris sent a message under a white flag to say, "I don't know if you are aware of it, but you are holding the only water supply in these parts, and if we can't have water we can't go on fighting."

Another time I am told that in the midst of some heavy fighting the Maoris put up the white flag. When asked whether they meant that they surrendered they replied, "Oh, no; but we have run out of ammunition. Could you lend us some to go on with?"

#### atching the Parrots

I cannot quite believe that yarn myself, but at the same time it illustrates the spirit in which they fought.

The favourite food of the Maoris is parrot, pig, and dog.

The pigs are wild boar, but are said to have come originally from pigs which Captain Cook and other explorers put ashore for breeding purposes. Pigs and dogs are roasted whole on a wooden bar supported over a fire on two forked uprights.

Their way of getting parrots is delightfully simple.

The hunter would have a tame parrot with him and, hiding himself near a tree, would put a long stick up into the branches, holding the other end himself with his parrot perched on it.

The wild parrot, hearing the tame one calling, would fly to the tree and walk down the stick till within reach of the hunter. And there was his dinner!

#### TOO MUCH MONEY

The Banks are complaining that they have far too much silver money, and are asking the Mint to help them to reduce the quantity. It is estimated that the excess of silver coinage over the present requirements of the country is from £15,000,000 to £20,000,000—enough to pave Trafalgar Square

## CROW STEALS A GOLF BALL

Extraordinary Story

### THE DOG AND THE BUNCH OF KEYS

Crows and blackbirds have a great reputation for enterprise.

We all know how when "the maid was in the garden, hanging out the clothes, down came a blackbird and pecked off her nose," and cases have been reported where crows have carried golf balls for considerable distances. But a crow in New South Wales has beaten the record for impudence.

It swooped down from a tree on the golf links, picked up a ball, and returned to the tree. Neither threats nor persuasions could induce it to drop its booty, and when last seen it was high above the clubhouse with the ball still in its beak.

The dogs in New South Wales seem equally good carriers and much more sensible; for it is reported that, when Alderman Smith, of Molong, found in his pocket an important bunch of keys that his father required, he tied the bunch to his dog's collar, and ordered the intelligent animal to carry them to his father's house 17 miles off. Off trotted the dog, and did not stop till it reached its destination.

### STORY OF A DISCOVERY Tube which Led to the X-Rays

How a discovery made in Manchester in 1875 paved the way to Professor Röntgen's discovery of X-rays in 1895, was told the other day by Mr. William Thomson, who, in 1875, had invited Sir William Crookes to come to Manchester to see some chemicals he had made.

Sir William Crookes went to Manchester, and took with him some wonderful glass vacuum tubes he had made, showing Mr. Thomson the remarkable effects that could be produced by passing electricity through them. Some of Mr. Thomson's chemicals were introduced into vacuum tubes, and some splendid colour effects were obtained when they were made to glow by means of the electric current.

It was while experimenting with one of these very tubes that Professor Röntgen, twenty years later, discovered the X-rays, which for years must have been often produced without being detected.

### THE GIANT OF THE OCEAN Is he Disappearing?

The microbes thrive and multiply, but the giants of the Earth die out.

Long ago the mammoths and dinosaurs disappeared, and now one of the last giants of the sea, the sperm whale, appears to be nearing extinction. It has been hunted relentlessly because of its market value, and is becoming so rare that sometimes a whaler captures only one whale in the course of a season.

In Canada, at the National Conference for the Preservation of Wild Life, a resolution was passed that whalers should be required to have a licence and submit a return to their respective Governments. But such resolutions in Canada must be futile unless all the nations combine to save the whale.

### MAGIC LANTERN SLIDES The Camphor Trick

These who have magic lanterns should take note of a very simple method of making slides containing notices, or statements, or titles.

After carefully cleaning the glass slide it should be very lightly coated with the thinnest possible layer of grease.

If a small piece of camphor is then burned it will emit a very dense black smoke. Holding the greased slide over this, it becomes coated with a very fine and intensely black layer of soot. Upon this any words or drawings can be readily traced with a needle point, and will appear as white writing on the screen.

## BETTER WAYS OF FARMING

MAKING THE EARTH  
YIELD HER INCREASE

Country Life in the Bad Old  
Days

### WHY WORKERS LEAVE THE LAND

By Our Economic Correspondent

In all civilised countries the proportion of the people engaged in agriculture falls as time goes on. The reason for this is so important that we ought to understand it clearly.

In the old days agriculture was a very laborious employment. A large amount of labour was needed to carry on the work of the farm. That was because the methods used were simple and primitive, and agricultural machinery and implements were crude inventions.

In these old conditions the work of our agricultural labourers was not only arduous, but wretchedly ill-paid. During the first half of the nineteenth century the lot of the people who worked on our farms was one of abject misery.

#### Living on Potatoes

Bad as village housing may be now, it was worse then, and if we care to read the true accounts of the bad old days we read of men doing the work of beasts, of wages of a few shillings a week, of starvation, and of desperate outrages committed by those spurred to crime by want. When we read of agricultural distress today we do well to remind ourselves of the conditions of the early nineteenth century. In 1840 we read of Welsh labourers living "entirely on potatoes, and seldom enough of them."

The work of clever engineers caused a revolution in farm labour. Machines enable us to raise a given quantity of food with an ever-decreasing amount of labour. There has been a widespread substitution of machines for men, with the result that agricultural workers have sought other occupations.

#### Clever Machines at Work

Now we have machines to drill, mow, bind, distribute manure, dig potatoes, milk cows, and shear sheep. In the old days it took a great many workers to harvest the corn. Now if we look at a wheatfield in harvest time we see a clever machine reaping and binding, so that the golden field is cleared like magic with just a few people to wait on the machinery.

The process is still going on. New machines are being sent from the United States, from Canada, and from Australia, where experience of large cultivation has shown how to save labour. Two of the latest appliances are the multiple plough and the multiple drill.

The multiple seed-drill is a machine so wide that it is drawn by four horses yoked abreast. Only one man, the driver, is needed, and he rides on a platform at the rear of the machine. The multiple drill not only sows the seed, but simultaneously distributes the artificial manure for the crop.

#### The World's Advance in Wealth

So effective is this drill that one man between October 6 and November 18 sowed and manured 175 acres.

As time goes on these clever machines will be employed in agriculture all over the world, with the result that fewer and fewer people will be needed to grow the world's food. It is a mistake to suppose that that is a bad thing for the world.

The truth is that the fewer men required to do any one job the more men there are left to do other jobs, and the world needs so much work of various kinds that the setting free of labour is the only method by which the world can advance in wealth.



## THE WEEK IN GEOGRAPHY

### ESSEN

#### GERMANY'S GREATEST WORKSHOP

Since the breaking up of the Paris Conference, which failed to agree how Germany should pay for damage to France, no place in the world has been talked about so much as Essen.

For Essen is in the heart of the chief coalfield of Germany in the valley of the River Rühr, and there are the great steel and iron works of the Krupp firm, on which Germany relies for her prosperity as a manufacturing nation; and as Germany has failed to keep her promises of payments to France the French have claimed the right to march their army to Essen and, like bailiffs taking possession, to collect there and in the neighbouring towns the money Germany owes and says she cannot pay.

#### Ancient Town's Curious History

Essen is an ancient town with a curious history. Its early story is religious. It was a small place built around an abbey, and the abbess, who ranked as a princess when Germany was made up of small principalities, was its ruler, and she continued in power, in name at least, until about 120 years ago.

The old part of the town with its narrow streets and ancient churches brings to mind this history, but Essen, as the world thinks of it now, is the greatest manufacturing centre on the continent of Europe. It is the Sheffield of Germany.

It was the working of the coal seams in the valley of the Ruhr, Germany's richest mineral deposit, and the inventive genius of the Krupp family in developing the making of steel, that turned this quiet and quaint German town into a hive of industry with 300,000 inhabitants, and many more in the smaller towns that cluster around it.

#### Man Who Astonished the World

The first Krupp—Frederick—began steel-making in the time of the Napoleonic wars; the second Krupp—Alfred—astonished the world, in 1847, by making steel castings weighing two tons; but before he died he had made castings weighing 52 tons. The third Krupp—Frederick Alfred—was busy making guns of all sizes for any country in the world that would buy them, and arming the Germans on land and sea.

When Frederick Alfred Krupp died 21 years ago, he left his vast works at Essen, Kiel, and elsewhere, and his coal mines, to his daughter Bertha, and her husband has been carrying on the great business since their marriage. It will be remembered that the huge gun that shelled Paris from 70 miles away during the Great War was nicknamed Big Bertha.

#### War Work to Peace Work

Before the war the Krupp works were employing 80,000 workmen, and during the war 115,000. Their output of shells was 40,000 a day. Besides guns and projectiles Krupp's did every kind of work for which steel was needed—such as shipbuilding, armour-plating, railway engines, wagons and rails, boiler parts, and every sort of machinery used in manufactures. The capital invested in the works was £12,500,000.

Since the war, the works have been transformed to produce the machinery of peaceful industry, and probably 50,000 men are still employed in them. This is the great heart of German industry that France has claimed the right to control, with the coal mines of Bochum, the commerce of Düsseldorf, the neighbouring Rhine port, the cotton, wool, silk, and rubber works of Elberfeld, and the cutlery industry of Solingen and Remscheid.

## SAILING SOUTH

### NEW EXPEDITION TO THE PACIFIC

Out in the Spirit of the Old Elizabethans

#### A TEN-THOUSAND-POUND VOYAGE THAT FOUND AMERICA

British scientists are reviving the traditions of Queen Elizabeth's days. They have formed a Scientific Expeditionary Research Association, and are fitting out an expedition to that sea of endless romance, the Pacific Ocean.

A 2000-ton schooner, to start at the beginning of the summer, is to visit the Canaries, the Panama Canal, the Galapagos and Easter Islands, and then work west to a series of islands within the tropics not commonly visited or known. It will be a long voyage lasting ten months; it will cost about £45,000, and will be carried out with a crew of 70 and some 50 men of science, and others interested in gaining knowledge.

#### Round the World with Drake

Here we have a ship of 2000 tons and a sum of £45,000 to spend on it. Gilbert, who gave us Newfoundland, sank to immortality in a ten-ton ship.

The new £45,000 venture will follow the track of Columbus as far as America. His great voyage cost, including £400 for himself, £450 for his captains, £4250 wages for the crews, and £5600 for his three little ships, altogether about £10,700. For that he discovered a continent of nearly 17 million square miles.

When we took possession of Australia we sent a fleet of nine ill-sailing little ships. Their total tonnage was only half as much again as the new expedition's 2000-ton schooner; her total crews only 211 men. What a dream voyage this South Pacific venture would have seemed to Elizabeth's sea dogs! Drake's men sailed round the world for nine farthings a day, plus rations and a share of their master's plunder.

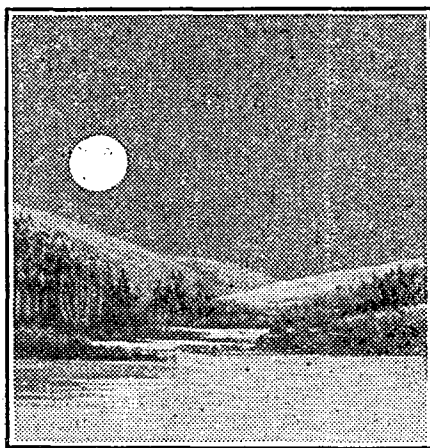
And consider the food and quarters of those tough, harum-scarum heroes who won our proudest laurels! Their ships were little better than coffins—foul, wet, the permanent homes of scurvy, dysentery, and typhus.

#### The Men Who Conquered

The food consisted of one gallon of sour bad beer a day, with biscuit or bread full of weevils; and from day to day salt ling or cod, salt beef, or salt pork, generally very bad in quality and condition; a little rancid butter or oil two days a week, and cheese three times a week. No fruit, no vegetables, none of the preventatives of disease which even a savage would have on land.

Yet victims of that system sailed to America with Columbus, to the Pacific with Magellan, and round the globe with Drake. The new cruise will be anxious and arduous for all who sail, but the conditions will be such as would have excelled our ancient mariner's rosiest dreams of a poor seafarer's paradise.

#### THE MOON NEXT WEEK



The moon at 6 p.m. on February 1

## C.N. QUESTION BOX

All questions must be asked on postcards, and not more than one question on each card. Name and address must always be given.

#### What are Borities?

Thatching poles, or rafters, cut from mangrove trees in East Africa.

#### On What Should a White Rat be Fed?

On bread and milk, table scraps, potatoes, cake, and fruit, but nothing greasy.

#### What is the Speed of a Fox?

Professor Arthur Thomson says the fox can run at a speed of 20 miles or more an hour.

#### What Does B.M. Mean on the King's Head on British Coinage?

The letters are the initials of Sir Bertram Mackennal, A.R.A., who designed the coinage.

#### To What Country Does a Stamp Bearing the Name Sedang Belong?

Such stamps were printed and sold about 1890, but they were bogus, and no such country as Sedang exists.

#### Is the Hedge Sparrow a True Sparrow?

The house sparrow and tree sparrow are both true sparrows, but the hedge sparrow is quite a different bird, and is more nearly related to the robin.

#### What is a Spade Guinea?

A guinea coined in the reign of George III, from 1787 to 1799. It is so called because the shield on the reverse has the shape of the spade of playing-cards.

#### What is a Funded Debt?

A loan borrowed by the State for a short period that is converted into stock represented by bonds for definite sums, bearing interest at a stated rate and redeemable after a fixed period of years.

#### Why is the East on the Left of a Star Map?

Because the star map is supposed to be viewed in the same position as the sky—that is, over the head. Hold the map above the head and look at it, and you will see the cardinal points in the right positions.

#### What is Lord's?

Lord's is the most famous cricket ground in England. It is the home of the M.C.C., or Marylebone Cricket Club, the Parliament of Cricket, and is named after Thomas Lord, a famous cricketer who first secured the ground.

#### Is the Mistletoe Poisonous to Cattle?

No; on the continent of Europe the mistletoe foliage is often given to animals as fodder. The berries, however, appear to be harmful; and some time ago a boy who ate some appeared to be suffering from alcoholic poisoning.

#### Is the Guinea-pig the Same as the Cavy?

Yes; guinea-pig is the popular and familiar name, while cavy is the name used by fanciers and exhibitors. Scientifically, the cavia, or cavius, form a genus of which there are other members beside the guinea-pig. The guinea-pig is not a pig, and does not come from Guinea.

#### On What do Anemones Feed?

On almost anything of an animal nature. All varieties of the smaller fishes are devoured voraciously, together with crustaceans, molluscs, and other creatures. In an aquarium some protection should be afforded to other small creatures, or the anemones will in time exterminate them.

#### How Long Can a Sheep Live Without Water?

Exhaustive experiments recently made in South Africa by the Grootfontein School of Agriculture show that sheep can exist for 280 days solely on a diet of prickly pear; and with the addition of a little lucerne they could go for 500 days without water. Of course they draw moisture from the food.

#### What are the Approximate Dates of the Oldest Human Skulls?

In Java the top of a skull and some teeth, apparently human, were found that are thought to date back half a million years; a jawbone found at Heidelberg is dated about a quarter of a million years ago; and the smashed bones of a whole skull, found at Piltown, in Sussex, is placed at a hundred thousand years ago. The dates, however, are guesses, and authorities differ.

## HIDING BEHIND THE MOON

### STAR DISAPPEARS FOR NEARLY AN HOUR

Travelling Round the Earth Faster than a Bullet

### A COLD AND SILENT WORLD

By Our Astronomical Correspondent

On Saturday night, January 27, the bright star Aldebaran will appear to approach the Moon, and ultimately be hidden behind her. This is called an *occultation* of the star by the Moon.

It is to be hoped that the night will be fine, for the event will be an interesting one, the space between the star and the Moon being seen gradually to diminish in the course of the evening till the actual occultation, which occurs at 35 minutes after midnight.

Actually it is the Moon that is moving, and it will be seen that she moves over a space equal to about her own width in an hour, so that at the end of that time she is 2288 miles from where she was at the beginning.

#### Light Appears to Go Out

We see, therefore, that the Moon is speeding round the Earth at a rate half as fast again as a rifle-bullet leaves the muzzle. At her distance the Moon appears serene and still, but this occultation will make her motion quite obvious. As she will be gibbous—that is, between first quarter and full moon—the star will vanish behind the dark portion on the left of our satellite.

But, though a bright first-magnitude star, Aldebaran will appear considerably dimmed by the radiance of our satellite, getting quite faint as the Moon draws near, so a little optical aid will be needed. Even opera-glasses will greatly help as the minute approaches for Aldebaran's disappearance.

As this takes place behind the dark part of the Moon, which is invisible, the star will appear suddenly to go out. The observer will be watching the scintillating point of light, and in an instant the light will be gone.

#### Vanished Star Reappears

Aldebaran will reappear at 1.30 a.m. from behind the bright, sunlit edge of the Moon's disc on the right, the proximity of the bright lunar surface making him quite imperceptible to the eye.

It is interesting to reflect that, whereas the Moon is but 240,000 miles away, Aldebaran is 893 million times as far off, and that the light which takes little over a second to reach us from the Moon, takes about thirty-four years to come from Aldebaran.

For a brief span of time—barely two hours—these two bodies so far apart will apparently be in line with our eyes. Actually they will not be so, for Aldebaran is not now where we see him; he is only where he was 34 years ago. Since then he has travelled thousands of millions of miles toward the south-east, yet, owing to his distance, he appears almost in the same place.

#### Two Hundred Below Zero

And what a difference there is between these two celestial bodies! Aldebaran is a colossal globe, estimated to be capable of containing nearly 2000 million Moons, and radiating heat very much like our Sun, only from an immensely greater surface. The Moon, when not lit by the Sun's rays, is considered to be at about 200 degrees Fahrenheit below zero.

The surface of Aldebaran is a scene of colossal fiery tumult, in which the hardest metals are converted into vapour, and the crimson flames of hydrogen gas are whirling upward for many thousands of miles in terrific cyclones, only to fall back like burning rain into that raging sea of fire.

On the Moon all is silent, cold, and still, save for the occasional splutter of a meteor against her surface. G. F. M.



## A Fine New Adventure Story Begins in Next Week's C.N.

## THE HOUSE OF SILENCE

A School Story  
With a MysteryTold by T. C. Bridges  
the C.N. Storyteller

## CHAPTER 62

## The Tracker

NOT a word did Ray or Jimmy say to anyone when they went in to tea.

Mr. Flower had warned them, and though they were bursting to tell Bob Dane at least, they kept loyally silent. They were to go to the Doctor at seven, and this left them about half an hour to themselves when tea was over.

"Ray," said Jimmy, as they walked together across the quad, "I've left my watch down in the Old House. I think I shall scoot down and get it."

Ray was a little doubtful. "Is that playing the game?" he asked.

"I think so. We didn't promise Slogger not to go, and I don't want to lose my watch. Ten to one they'll be searching the place tomorrow, and I'd better take the chance while I can. I shan't be more than ten minutes."

"All right, then; and you might bring my violin," said Ray. "I've got some work to do, so I won't come with you."

Jimmy went off quickly. To say truth, the knowledge that he was cut out of his private laboratory had upset him more than a little.

Chemistry was the one thing that he was really keen on, and he had delighted in having this quiet retreat where he could carry out his experiments in peace. Indeed, he would willingly have given his share of the reward for finding the necklace in exchange for being able to keep his cellar.

Of course, it was good business to have caught the thief, but Jimmy wished most heartily that Slade had chosen some other place to lurk in than the Old House.

It was just because Jimmy was so deep in thought that he did not exercise his usual care in crossing from the quadrangle into the old court, and that he never noticed a lurking figure which dogged him.

As Jimmy reached the old well, and, stepping over the low kerb, took hold of the chain and lightly swung himself downwards, the boy who had been following him was peering around the angle of the wall not more than a score of yards away and watching with goggling eyes.

He waited until Jimmy had disappeared, then ran silently across to the well, and stood listening intently. Then he ventured to peep over.

There was no sign whatever of Jimmy, but from below the watcher heard a slight rustling sound.

"A passage," he muttered softly—"a secret passage. So I'm on to it at last."

He waited a little while longer until the sounds from below had quite died away. Then he, too, got on the kerb, tried the chain, found it was firmly chocked, and after a moment's hesitation set to climbing downwards.

## CHAPTER 63

## What the Head Said

SEVEN o'clock had struck, and Ray was standing at the gate leading down to the headmaster's house.

"Where on earth is Jimmy?" he said, half aloud. "If he doesn't come soon I shall have to go in alone."

At that very moment steps came pattering across the gravel, and there was Jimmy hot and breathless.

"Frightfully sorry to be so late, Ray. There was someone else in the place, and I had to dodge him."

"Who was it?" asked Ray, sharply.

"Haven't a notion, but, whoever he was, he came by the well and the secret passage. If I'd only

had time I should have found out, but it was nearly seven and I had to run. I've got your fiddle. Come on."

"Come in," came the Doctor's voice as Ray tapped on the study door, and the tone of it was kindly enough to make the boys feel comfortable at once.

The Doctor himself was standing in front of a big, glowing fire, and there was a twinkle in his eyes which did not escape Ray's notice.

"Well, you young law-breakers," began the Head, "what have you got to say for yourselves?" He pointed to two chairs. "Sit down, both of you. I want to hear all about this business. You tell me, Cartwright. Begin at the beginning. I want to know how you found your way into the Manor House."

This was a bit awkward, and Ray hesitated. Naturally he could not explain how Arden and Co. had put him in the well. But he had to say something.

"We—we found a secret passage, sir," he began.

"A secret passage?" repeated the Doctor, raising his eyebrows.

"It's from the old well, sir," put in Jimmy. "It takes you into the cellar of the Manor House."

Dr. Glennie seemed to sense that there was something behind this. He did not ask how they had found it.

"So you two took advantage of this to start a chemical laboratory down in the cellar? Is that the fact?"

"Yes, sir," Jimmy answered. "And I used it for practising my violin, sir," added Ray.

"I had no notion you were a musician, Cartwright. But go on, and tell me what you know about this man Slade."

Ray began his story, and here and there the Doctor threw in a keen question.

"So this man was in disguise?" he said presently.

"He was wearing Mr. Flower's clothes," replied Ray, reluctantly.

By the time Ray had finished he felt as if he had let out a great deal more than he had meant to, and he sat silent, anxiously wondering what would happen next.

The Doctor did not speak for a moment or two. Suddenly he asked a question.

"And how many times have you two been out of bounds down in the Manor House?" he demanded.

Ray's heart sank. "Almost every day, sir," he confessed.

"And the penalty is half a day's detention for each offence," said the Doctor.

Ray's face lengthened, and so did Jimmy's.

"On the other hand," said the Doctor, "we have the fact that you went there to work and not to smoke cigarettes, and that you have recovered my wife's pearls and caught the thief. Also, I don't mind telling you that Mr. Flower has put in a word in your favour. Well, my sentence is this—that you stay to supper tonight with Mrs. Glennie and myself."

It was a delightful little supper-party. The boys, who had always been rather in awe of the Doctor, found him as kind as Mr. Flower himself. Afterwards, Mrs. Glennie insisted on Ray playing for them.

The others listened in charmed silence, and when it was over the Doctor laid his hand on Ray's shoulder.

"My boy, you have a great gift," he said, "and one that must be cultivated." Then he turned to Jimmy: "And now it's only fair that you should do some chemical experiments for us, Clayton," he continued.

Jimmy went a horrified pink, and the Doctor laughed heartily.

"I am only chaffing, Clayton. But really I am interested, and I shall talk to you further about your chemistry. Also, I will see that you have some place in which to work. Now, before you go, there is this matter of the reward. You have fairly earned it, so what will you like done about it?"

"May my father have my share, if you please, sir?" asked Ray.

The Doctor nodded. He already knew of Mr. Cartwright's troubles. "And you, Clayton?" he asked; and just then there was a knock and the maid announced Mr. Flower.

## CHAPTER 64

## Ferguson Owns Up

THE expression on Slogger's face told everyone at once that something fresh had happened.

"What is it?" asked the Head quickly.

Ray and Jimmy rose to go, but Slogger raised his hand.

"You can stop, boys," he said, "that is, if the headmaster allows you."

"Yes, certainly; let them stop," said Dr. Glennie. "I take it, then, Flower, that you have made some further discoveries in connection with this business?"

"I have, sir. After dinner I went down to the Manor House, with the idea of trying to discover if Slade had hidden any of the proceeds of his thefts about the place. As I passed the door of the cellar where Clayton has had his laboratory I heard someone inside beating on the door. I had to burst it open. To my amazement there was Ferguson."

"Ferguson!" repeated the Doctor in amazement. "What was he doing there?"

"Exactly what I asked him, and what I had much difficulty in finding out, for the boy was beside himself with fright. It seems that he saw someone go down there tonight by the well passage, and—"

"It was I, sir," put in Jimmy quickly. "I went for my watch and Cartwright's violin. I have told the Head, sir."

"Oh, so it was you that Ferguson was tracking?" said Slogger. "Then you locked him in?"

"No, sir, I went back by the well passage, only I pulled the chain up after me."

There was a twinkle of amusement in Slogger's eyes.

"Then, unknowingly, you have done yourself rather a good turn, Clayton," he said. "Ferguson, locked up alone in the dark for a couple of hours, got so thoroughly scared that he has made a clean breast of everything."

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"Of the cribbing business, sir?" cried Ray.

"Yes, and more besides. But that will be for Dr. Glennie's ears. Meantime, I have to offer you my sincere apologies, Clayton."

Jimmy got red as fire. "N-no, please, sir," he stammered. "You c-couldn't help it. The evidence was awfully strong against me."

"It was, Clayton, yet at the same time I judged too hastily. I am very sorry."

Jimmy was scarlet, yet too happy to speak. The Doctor wisely interfered, and, telling the boys it was their bed-time, sent them off. It is safe to say that two happier youngsters were not to be found that night in the Charminster dormitories than Ray Cartwright and Jimmy Clayton.

## CHAPTER 65

## Clearing Up

THOUGH neither Ray nor Jimmy had breathed a word, next morning the school was full of rumours. Ferguson had disappeared. Some vowed he had run away.

Before the day was over, Arden, Hogan, and Bulmer as well had mysteriously vanished.

Excitement ran high when at tea an order was read out for all the boys to attend in Big School.

Then the mystery was solved.

The Head told the boys the full story of the cribbing business as confessed by Ferguson. Then he went on to say that the boys responsible for this abominable plot had also been found guilty of other offences, especially of betting upon horse-races.

"They have been expelled from the school," said the Doctor gravely. "And let their fate be a warning."

Then he went on to speak of the robberies and the discovery of Slade as the thief.

"This discovery and the fact that Slade is now in custody is due to the pluck and cleverness of two boys," he said. "These are Cartwright and Clayton, who will receive between them the £50 reward."

He stopped, and someone jumped up and shouted, "Three cheers for Cartwright and Clayton!"

They were given with a will; and Ray and Jimmy escaped, covered with blushes, and took refuge in their own Form-room.

"And what's become of that beggar Ferguson?" asked Bob Dane, who had followed them.

"He's in detention, but he's going to get another show," replied Jimmy. "Ray asked Slogger, and he went to the Head about it. Just like Ray," he grinned.

"That's Jimmy's chaff," said Ray, "but look here, Bob, give the beggar a chance. He'll be all right now that Arden and his lot are gone."

"And so will you, young Cartwright," came another voice, and here was Searle. "Now, see here, I know you're mugging up for that scholarship, but that's no reason why you should neglect your football, so you'll come up and play in the dormitory match tomorrow—and see you play properly."

"I'll do my best," promised Ray modestly.

"He generally does," whispered Jimmy to Bob. "You can always back Ray as a real trier. He'll get that scholarship, too."

Ray did get the scholarship, and so was able to stay at Charminster. He is now in the top Form, and in the school fifteen, of which, by the by, Jimmy is captain.

The two are, if possible, greater chums than ever. When he leaves Charminster next Easter, Jimmy is going straight into a big technical college, and will no doubt be heard of as a distinguished chemist.

As for Ray he is true to his first love, his music. He hopes to take his music degree at the university, and then to get a position as music master at the old school to which he is so devoted.

THE END

## Five-Minute Story

## The Fair

WHEN King John misruled the land, Ranulph Earl of Chester was almost as great a hero as Robin Hood, and there was not a fair or a fireside in the country where the minstrel did not sing ballads of his deeds.

It was a bold man needed in those days to watch the troubled borders of Cheshire, when nobody knew at what moment of the night or day the wild Welsh would swoop down from their hills. Along the borders of his county Ranulph built great castles, and the heart of the earl was as strong as the thick walls of the strongholds he set up for the safety of the land.

Yet once the brave Ranulph was caught napping in his great castle of Rhuddlan.

The earl sat in the castle hall playing with his hounds and watching the white fingers of his wife Constance moving over the tapestry frame.

There came a sudden cry and a messenger running in alarm.

"My lord, the Welsh are upon us! They are swarming down the mountain-side like ants, and none is here to defend us!"

It was true. The enemy had been quiet for some time and Ranulph had basked in the blessings of peace.

With only a handful of men in the castle there was not a moment to be lost, and the earl sprang to his feet crying: "Ride, ride like the wind to the city and tell the constable I must have troops immediately, or these Welsh robbers will burn our crops, take our cattle, and perhaps even the castle itself!"

Off flew the messenger, but the constable of the city was no better off than the earl, for there were no regular troops at hand. But he was a good constable and had his wits about him.

It was the time of the Fair of St. Werburgh, and through the city gates were thronging the odd, picturesque crowd always to be seen on fair days.

Ballad singers and minstrels with their harps, beggars and vagabonds tattered and torn, thieves, rogues, stout friars, magicians, conjurers, and cake-sellers, were all laughing and shouting and crying their wares among the gay booths at every corner.

The constable took the merry minstrels into his confidence, and nobody knows if they had ever heard of the Pied Piper of Hamelin, but they knew how to raise an army. Off they went, playing and singing across the plain; and after them followed the rabble from the fair to the great castle of Rhuddlan.

It was besieged by the Welsh, who watched the approach of this strange army with amazement, and their superstitious hearts did not like the sight. Without waiting even to carry off the Border cattle, they fled away to the safety of their mountains.





# The Sun Will Arise and Make Happy the Skies



## DI MERRYMAN

LITTLE Johnny had been taken by his mother to a museum, of natural history, and he was particularly interested in the big stuffed animals.

"Well, Johnny, where have you been this afternoon?" asked his father when he got home.

"It was wonderful, Dad," exclaimed Johnny. "Mother took me to a dead circus."

### What Am I?

MY first is in ewe, but not in lamb;  
My second's in Thomas, but not in Sam;  
My third is in oval, but not in square;  
My fourth is in diver, and also in dare;  
My whole is something you often burn.

If you study this well my name you will learn.

WHAT is that which never asks questions, yet requires many answers? The door-bell.

### Do You Know

THAT whales do not spout water? They breathe out air, and when they are just below the surface the breathing sometimes shoots up some water.

That it was not Columbus who made an egg stand on end, but Brunelleschi, the Italian architect? He did it when asked how he was going to support the great dome that he proposed to erect for the cathedral at Florence.

That cork legs are never made of cork? Artificial legs obtained this name from the fact that most of the makers of such articles lived in Cork Street, Piccadilly.

That we often find in books the name Hudson's Bay? It should be Hudson Bay, as we can see for ourselves by looking up any atlas.

### A Poultry Problem

MR. JONES and his friend were discussing poultry.

"All but one of my hens laid on Monday," said Mr. Jones, "but on Tuesday morning I found two hens dead, and one had not laid. However, I had eighteen eggs in the two days."

How many hens had Mr. Jones on Tuesday night?

WHAT word of three letters, being one syllable, becomes three syllables by adding just one letter? Are; add a and it becomes area.

### Do You Live in Silver Street?

THE name generally dates back to the time when men of one trade congregated in particular thoroughfares, and Silver Street was the street where the silver-smiths carried on their business.

### Puzzle Word

I AM composed of 14 letters. My 1, 11, 13, 8 is a young horse; my 4, 2, 7 is an offspring; my 10, 14, 6, 5 is very tidy; my 12, 9, 3 is a small instrument; my whole is a city in Europe.

Solution next week

### Highroads to Health



### Club-Swinging

WHY does a donkey eat thistles? Because he's an ass.

### No Meanness Meant

AN old countryman volunteered to do some shopping in the nearest town for a neighbour, whose little girl was ill.

His first visit in the town was to a chemist's shop, where he presented a doctor's prescription for the little girl's medicine. The prescription called for a very small quantity of a dangerous poison, and the chemist very carefully let three small drops fall into the medicine.

The old countryman was annoyed at this.

"Young man," he exclaimed hotly, "you needn't be so mean with that stuff. I told you it's for a poor little girl who is very ill."

### Caught Napping

THERE was an old man who supposed

That the street door was properly closed;

But some very large rats

Ate his coats and his hats

While that sleepy old gentleman dozed.

EDWARD LEAR

### ANSWERS TO LAST WEEK'S PUZZLES

#### A Queer Customer

The man had 10d.; after receiving another 10d. he had 1s. 9d., of which he spent 1s. To his 9d. was added another 9d., making 1s. 6d. After spending 1s. he had 6d. left, which, with an additional 6d., gave him 1s. to spend, with nothing left.

#### Very Mixed

Around me shall hover

In sadness or glee,

Till life's dreams be over,

Sweet memories of thee.

#### Buried Places

Toronto, Berlin, Guinea, Peru, Lyons, Thebes, China.

#### Who Was He?

The Amazing Ruler was Peter the Great

## Jacko Meets the Mayor

ONE morning Jacko came clattering into Belinda's on roller skates, struck an attitude, and burst out:

Oh, maiden fair, I prithee quickly state  
If thou wouldst care to circumambulate,  
Gyrations make upon refulgent floor,  
Each pedal end adorned with wheellets four!

Then he lost his balance, and bumped into poor Belinda, who let her broom fall with a clatter and sank into the nearest chair.

"Are you ill, you poor boy, are you ill?" she cried.

"Ill!" retorted Jacko scornfully. "Now, would I give you an invitation like that if I were ill?"

"Invitation?" inquired Belinda, brightening up. "Say it again!"

So Jacko, striking another pose, said his lines again.

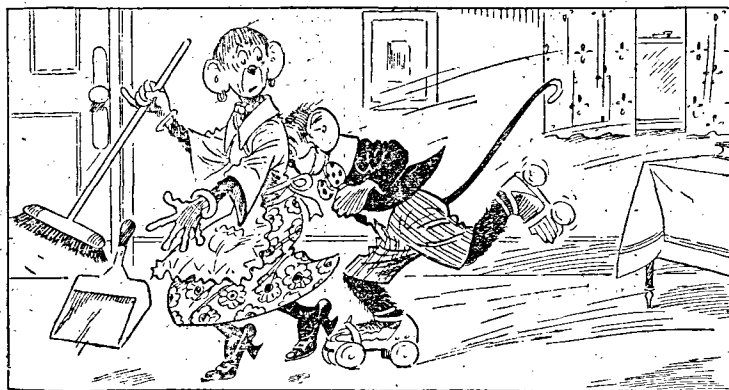
But Belinda must have been very dense for, very disappointed, Jacko said, "I thought you wouldn't understand it—it's poetry. What I mean is," he explained, "how would you like to come roller-skating? The new Monkeyville rink is to be opened today."

"I don't know how to roller-skate," said Belinda doubtfully; "but I could wear my new hat," she added thoughtfully.

So it was arranged. They had a quick lunch and hurried down to the rink, which the Mayor, in his robes and chain of office, and the Mayoress were to open.

"I'll sit down and watch you," said Belinda, when they got inside.

So Jacko went off and put on his skates; and the Mayor



He bumped into poor Belinda

made a speech and the band played. Then the Mayor said that he would skate, and off he went.

The band played again, and the Mayor went gliding round, while the Mayoress sat in a big chair and watched his noble figure. And then everybody started to skate.

Suddenly there was a terrific clatter, like a ton of coals going into the cellar. People shouted and screamed, and the Mayoress fell back in her chair, squealing and kicking her heels on the floor.

Belinda, who had been watching the ostrich feathers in a lady's hat, looked up and saw the Mayor come to the floor bumpity, bumpity, bump as the rushing figure of Jacko crashed into him; and then the two went rolling over together.

An attendant came rushing out, but Jacko was up first, and started to clatter away. But the Mayor's chain had got round his neck, and he tripped over it.

Belinda stole silently away home before the indignant crowd seized Jacko, tore the chain from him, and pulled his skates off.

While they were discussing what to do with him, and fanning the Mayoress who had gone off into a faint, Jacko made a sudden dart out of a window, and tore down the road to Belinda's.

As he reached the house he suddenly found that he was fiercely gripping something soft crushed up in his hand. It was the Mayor's cocked hat!

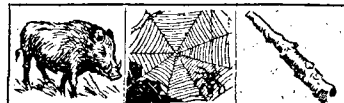
## Those Who Come and Those Who Go

How many people are born in your town and how many die? Here are the figures for four weeks in 12 towns.

TOWN	BIRTHS		DEATHS	
	1922	1921	1922	1921
London	6711	7335	4381	5664
Glasgow	2110	2253	1174	1269
Birmingham	1359	1543	764	784
Edinburgh	666	614	434	452
Hull	471	519	293	286
Bolton	240	261	203	219
Swansea	207	261	147	115
Derby	190	182	118	186
Preston	152	188	117	123
Brighton	138	167	152	130
Exeter	78	87	50	42
Yarmouth	74	69	42	56

The four weeks are up to Dec. 30, 1922

## Ici on Parle Français



Le sanglier La toile Le gourdin d'araignée

Le sanglier habite les forêts

La mouche évite la toile d'araignée

Le paysan est armé d'un gourdin



Un os Le mendiant Le seau

Les chiens adorent ronger les os

Le mendiant demande l'aumône

Le seau est plein d'eau fraîche

## Tales Before Bedtime

### Over the Wall

THE children couldn't understand the house across the road at all. It had a high brick wall all round it, much too high to peep over, and the door in the wall was kept locked. When errand-boys brought milk and bread an old woman rather like a witch opened the door, and nobody else was ever seen to enter.

Jane said a queer old lady lived there who liked to be alone, but the children felt sure she was a witch or something, who did queer things behind the high wall.

The strangest thing was that whenever they went prowling round this house they nearly always heard a hoarse voice cry: "Maria! Maria! Fetch a policeman!" and yet Maria never *did* fetch a policeman, because the door in the wall remained shut.

Who *was* Maria? And why did the person with the hoarse voice want a policeman so often, and why didn't Maria oblige him by fetching one?

It was very puzzling, and the children grew curious about it all. Once Jerry threw a ball over to see what would happen. But all that happened was that he lost his ball.

Then he tried to climb up the wall; but he only managed to get half-way and hurt his toes.

Then the children found a pair of old stilts in the shed—tall wooden props with pegs driven in them for people to stand on, and if one practises very hard it is possible to walk about on stilts and look as tall as a giant.

"The very thing!" cried Jerry. He began to practise



Once he threw a ball over

walking on stilts at once, and in a day or two could stand on them and walk about quite easily.

But all he saw when he peeped over the high wall was a little old lady weeding a bed of yellow crocuses! Six tabby cats walked round and round her purring, and on the lawn there was a grey parrot screaming, "Maria! Maria! Fetch a policeman!"

"Well!" said Jerry.

And then the stilts broke and down he fell. And the worst of it was he distinctly heard the old lady chuckle!

## Then and Now



Dress in 1823



Dress in 1923



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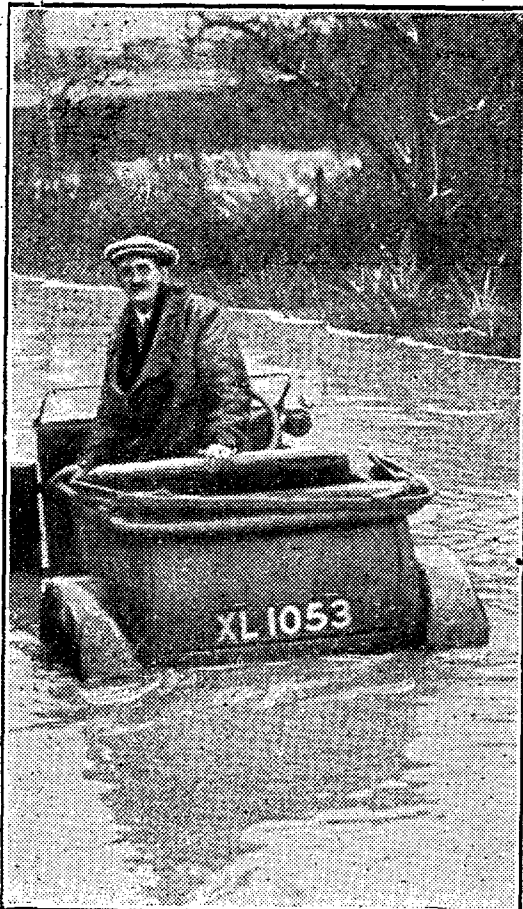
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January 27, 1923

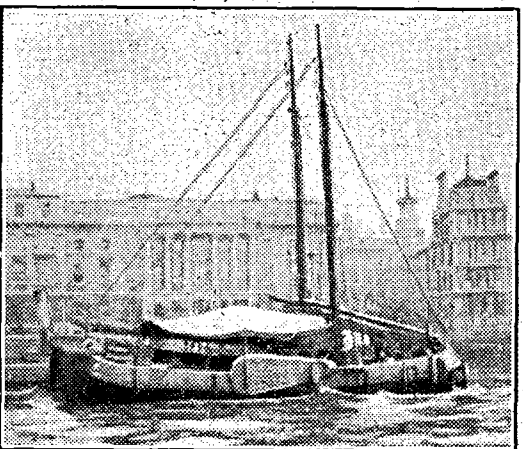
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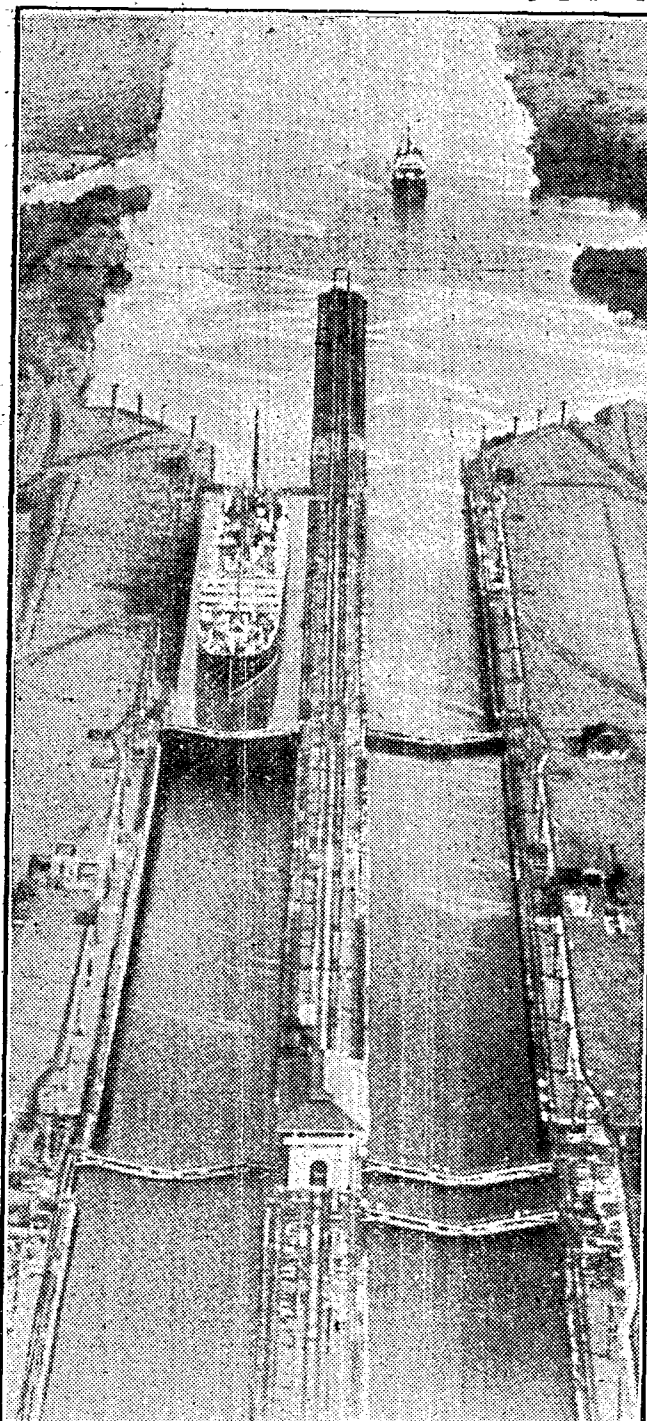
## LINER SAILS ACROSS AMERICA - BRINGING OUT PHARAOH'S TREASURES



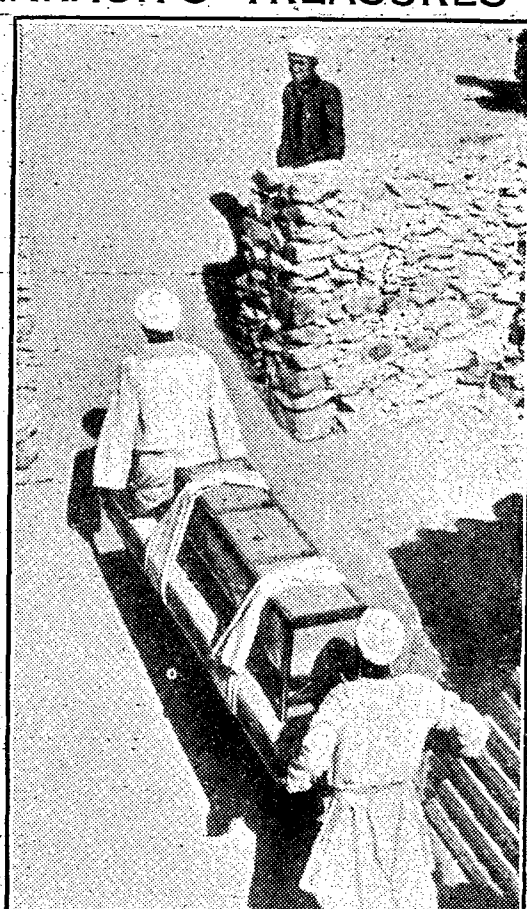
**Held Up by the Floods**—Heavy floods have occurred in many parts of England, and here we see a motor-car held up on a submerged road in the Thames Valley



**Dutch Eel Boats in the Thames**—These old Dutch eel boats, which lie in the Thames off the Custom House, London, are to be replaced by motor-boats. Dutch eel boats have had their berth in the Thames at this point ever since Queen Elizabeth's time. See page 2



**Liner Between Two Continents**—The 20,000-ton Cunarder Laconia, which is now on a cruise round the world, passing through the great Gatun locks of the Panama Canal. She is the largest ship that has ever sailed round the world. Here she is seen between two oceans and two continents—a wonder that would have startled the old navigators



**Bringing out Pharaoh's Treasure**—An ebony box, covered with gilt and inlaid with bronze and ivory, being carried out of Tutankhamen's chamber at Luxor



**Jar of Scent over 3000 Years Old**—Carrying out an alabaster jar containing balm for the dead, from the recently discovered tomb of Tutankhamen, at Luxor. The scent of the balm, it is amazing to learn, can still be detected after over three thousand years. See page 2



**New Year Lambs**—Very soon the English countryside will be dotted all over with young lambs gambolling in the fields. Here are two of the earliest New Year lambs with their mother, photographed in Yorkshire. Every week now the number will be growing



**Severe Weather in the Atlantic**—Despite the warm spells that have been experienced in Great Britain, vessels crossing the Atlantic have encountered very severe weather, and the condition of this ship on its arrival at an English port will give some idea of the cold

**ALL THE WORLD LOVES THE C.N. MONTHLY. ASK FOR MY MAGAZINE. EDITED BY ARTHUR MEE**

The Children's Newspaper is printed and published every Thursday by the proprietors, the Amalgamated Press (1922), Ltd., The Fleetway House, Farringdon St., London, E.C. 4. It is registered as a newspaper and for transmission by Canadian post. It can be ordered (with My Magazine) from these agents: Canada, Imperial News Company; Australasia, Gordon and Gotch; South Africa, Central News Agency; India, A. H. Wheeler and Co. N.Y.